



**EXPLORING ICU NURSES' KNOWLEDGE, PRACTICES AND PERCEPTIONS
ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS AT A
SPECIFIC UNIVERSITY TEACHING HOSPITAL IN KIGALI, RWANDA**

RUMAGIHWANA Liberatha

College Medicine and Health Sciences

School of Nursing and Midwifery

Masters of Science Nursing

2017



**EXPLORING ICU NURSES' KNOWLEDGE, PRACTICES AND PERCEPTIONS
ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS AT A
SPECIFIC UNIVERSITY TEACHING HOSPITAL IN KIGALI, RWANDA**

By

RUMAGIWA Liberatha

216339480

Submitted in Partial Fulfillment of the Requirements for the Master of Science degree in

Masters of Nursing sciences

In the

College of Medicine and Health Sciences

Supervisor: Professor BHENGU Busisiwe Rosemary

Kigali July 2017

DECLARATION AND AUTHORITY TO SUBMIT THE DISSERTATION

Surname and First Name of the Student:

RUMAGIHWANA LIBERATHA

TITLE OF THE PROJECT:

EXPLORING ICU NURSES' KNOWLEDGE, PRACTICES AND PERCEPTIONS ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS AT A SPECIFIC UNIVERSITY TEACHING HOSPITAL IN KIGALI, RWANDA

a. Declaration by the Student

I do hereby declare that this *dissertation* submitted in partial fulfilment of the requirements for the degree of **MASTERS OF SCIENCE** in **NURSING**, at the University of Rwanda/College of Medicine and Health Sciences, is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

Date and Signature of the Student



12.06.2017


b. Authority to Submit the dissertation

Surname and First Name of the Supervisor

Professor BHENGU Busisiwe Rosemary

In my capacity as a Supervisor, I do hereby authorize the student to submit his/her **dissertation**.

Date and Signature of the Supervisor/Co-Supervisor

12.06.2017 

Abstract

Background

Oral care in the ICU is a frequent and common nursing procedure which has been proven to prevent Ventilator Associated Pneumonia and also considered as an important part of daily nursing care. Unfortunately this is thought by many nurses to be a comfort intervention rather than an intervention to control accumulation of pathogens in the oral cavity contributing to ventilator associated Pneumonia which results in long hospital stay, increase of cost and increase of mortality rate in ICU.

Aim of the Study: *The* aim of the current study was to explore intensive care unit (ICU) nurses' knowledge, practices and perceptions about comprehensive mouth care for ventilated patients at one specific university teaching Hospital, Kigali, Rwanda. **Methods:** A quantitative descriptive approach, cross sectional prospective design, and a total population sampling was used. Self administered questionnaires were administered to 47 ICU nurses for data collection. Tables were used to present results and data entry was facilitated by the use of SPSS version 21. Chi-square statistical test and cross tabulation were used to compare variables.

Results: Study results showed that only 2(4.3%) ICU nurses knew that poor oral hygiene may result in ventilated associated pneumonia. Comprehensive mouth care obtained 10th rank among 17(36.2%) as an important procedure for ventilated patients. Moreover majority of ICU nurses 37(78.7%) were found to have low practice level in performing comprehensive mouth care.

Conclusion:Comprehensive mouth care is critical care for all ventilated patients. Unfortunately results of this study showed that most of ICU nurses had low level of practice and most of them could not link mouth care and prevention of Ventilator Associated pneumonia. Considering the important role of good oral care in prevention of VAP; these findings suggest the need for developing a standardized mouth care protocol and educating ICU nurses in area of comprehensive mouth care thus to increase quality of care and prevent nosocomial infection which kill ICU patients and increase costs and hospital stay

Dedication

This dissertation is dedicated to almighty God who enabled the researcher to accomplish this work, my husband **Emmanuel MUGWIZA** for his incredible advices, support and morale and my lovely children **GWIZA Jean Luc** and **GWIZA Dorcah** who managed to live with my absence during this period of studies.

TABLE OF CONTENT

Abstract	ii
Background	ii
Dedication	iv
TABLE OF CONTENT	v
LIST OF TABLES	ix
Acknowledgement	xi
LIST OF ACRONYMS AND ABBREVIATIONS	xii
CHAPTER 1. INTRODUCTION AND BACKGROUND TO THE STUDY	1
1.0. INTRODUCTION.....	1
1.1. BACKGROUND OF THE STUDY	1
1.2. PROBLEM STATEMENT	3
1.3. THE AIM OF THE STUDY	5
1.4. RESEARCH OBJECTIVES	6
1.5. RESEARCH QUESTIONS.....	6
1. What level of knowledge do ICU nurses have about comprehensive mouth care?.....	6
1.6. SIGNIFICANCE OF THE STUDY.....	6
2.0. INTRODUCTION.....	9
2.1 LITERATURE REVIEW SEARCH.....	9
2.2 EMPIRICAL LITERATURE REVIEW	9
2.2.1. KNOWLEDGE, PRACTICES AND PERCEPTIONS OF ICU NURSES ABOUT COMPREHENSIVE ORAL CARE	9
2.2.2. CRITICAL REVIEW AND RESEARCH GAP IDENTIFICATION.....	11
2.2.3. IMPORTANCE OF COMPREHENSIVE MOUTH CARE	11
2.2.4. CHALLENGES TO ORAL CARE	11
2.3. THEORETICAL LITERATURE REVIEW	12

2.3.1. DESCRIPTION OF MOUTH CARE PROCEDURE.....	12
2.3.2. EQUIPMENT USED FOR MOUTH CARE.....	13
2.3.3. MOUTH WASHES USED IN MOUTH CARE.....	13
2.3.4. LIP MOISTURIZERS.....	14
2.3.5. CONCEPTUAL FRAMEWORK.....	15
CHAPTER 3: METHODOLOGY	18
3.0. INTRODUCTION.....	18
3.2. STUDY APPROACH	19
3.3. STUDY DESIGN.....	19
3.4. STUDY POPULATION	19
3.5. STUDY SAMPLE.....	19
3.6. SAMPLING STRATEGY	19
3.7. DATA COLLECTION INSTRUMENT	20
3.8. RELIABILITY AND VALIDITY OF STUDY QUESTIONNAIRE	20
3.8. DATA COLLECTION METHODS AND PROCEDURES.....	23
3.9. DATA ANALYSIS	23
3.10. ETHICAL CONSIDERATIONS	23
3. 11. PROBLEMS AND LIMITATIONS OF THE STUDY	24
3. 11.1. Problem.....	24
3.11.2. Limitations.....	24
4.0. INTRODUCTION.....	26
4.1. DESCRIPTION OF SOCIAL DEMOGRAPHIC DATA.....	26
4.2. LEVEL OF KNOWLEDGE OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS	27
4.2.1. DISTRIBUTION OF GRADE ABOUT KNOWLEDGE SECTION AMONG THE STUDY PARTICIPANTS.....	28

4.3. PERCEPTION LEVEL OF NURSES ABOUT COMPREHENSIVE MOUTH CARE...	31
4.3.1. DISTRIBUTION OF SCORES AMONG PARTICIPANTS ON THEIR PERCEPTIONS ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS	31
4.4. PRACTICE OF COMPREHENSIVE MOUTH CARE IN ICU	34
4.4.1. DISTRIBUTION OF SCORES AMONG PARTICIPANTS ABOUT MOUTH WASHES, EQUIPMENT, AND FREQUENCY OF PERFORMING COMPREHENSIVE MOUTH CARE.....	34
4.5 AVAILABILITY AND USE OF MOUTH CARE PROTOCOL IN ICU.....	36
4.6. TRAINING OF ICU NURSES	37
4.7. DIFFICULTIES MET WITH NURSES WHILE DOING COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS	38
4.9. SUPPLY OF MOUTH CARE EQUIPMENT BY HOSPITAL	39
CHAPTER5: DISCUSSION.....	42
5.0. INTRODUCTION	42
5.1. MAJOR FINDINGS OF THE STUDY	42
5.1.1. KNOWLEDGE OF ICU NURSES TOWARDS COMPREHENSIVE ORAL CARE FOR VENTILATED PATIENTS	43
5.1.2. PERCEPTION OF NURSES TOWARD COMPREHENSIVE ORAL CARE FOR VENTILATED PATIENTS	43
5.1.3. PRACTICES OF ICU NURSES TOWARD COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS	43
5.1.4. TRAINING OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS	44
5.1.5. AVAILABILITY AND USE OF MOUTH CARE PROTOCOL.....	45
CHAPTER 6.CONCLUSION AND RECOMMENDATIONS	46
6.1. RECOMMENDATIONS	46
6.2. CONCLUSION	47

REFERENCE LIST	48
ANNEX 1.PERMISSION FOR USING STUDY QUESTIONNAIRE	52
ANNEX 2. ENGLISH VERSION AND FRENCH VERSION STUDY QUESTIONNAIRES/QUESTIONNAIRE D'ETUDE)	53
ANNEX 3. ENGLISH VERSION AND FRENCH VERSION STUDY QUESTIONNAIRES/QUESTIONNAIRE D'ETUDE)	59

LIST OF TABLES

TABLE 1: CONTENT VALIDITY OF DATA COLLECTION TOOL.....	22
TABLE 2: SOCIAL DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANT N=47 .	27
TABLE 3: LEVEL OF KNOWLEDGE OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS	28
TABLE 4: DISTRIBUTION OF GRADE ABOUT KNOWLEDGE SECTION AMONG PARTICIPANT N=47	30
TABLE 5 PERCEPTION LEVEL OF NURSES ABOUT COMPREHENSIVE MOUTH CARE N=47	31
TABLE 6 DISTRIBUTION OF SCORES AMONG PARTICIPANTS ON THEIR PERCEPTIONS ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS N=47	33
TABLE 7 :LEVEL OF PRACTICE N=47	34
TABLE 8. DISTRIBUTION OF GRADES AMONG PARTICIPANTS ABOUT MOUTH WASHES, EQUIPMENT, AND FREQUENCY OF PERFORMING COMPREHENSIVE MOUTH CARE N=47	36
TABLE 9: AVAILABILITY AND USE OF MOUTH CARE PROTOCOL IN ICU N=47 .	37
TABLE 10: TRAINING OF ICU NURSES N=47.....	38
TABLE 11: DIFFICULTIES MET WITH NURSES WHILE DOING COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS	39
TABLE 12 SUPPLY OF MOUTH CARE EQUIPMENT BY HOSPITAL N=47	39
TABLE 13: ASSESSMENT OF ORAL HEALTH FOR VENTILATED PATIENTS ON ADMISSION N=47	40
TABLE 14: ASSOCIATION BETWEEN PERCEPTIONS OF ICU NURSES AND THEIR PRACTICE	40

TABLE 15: ASSOCIATION BETWEEN KNOWLEDGE AND PRACTICE OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE..... 41

TABLE 16: ASSOCIATION BETWEEN KNOWLEDGE AND PERCEPTIONS 41

Acknowledgement

I thank almighty God who gave me the power and strength and enabled me to accomplish this dissertation, I thank very much the University of Rwanda administration and academic staff for their support, I am also thankful to **Prof BUSISIWE ROSEMARY BHENGU** and **RUDO NYAMAKURA** who guided and advised me with parental words and supporting ideas.

Special thanks to **ANNAH PHILO SAREFHO** who gave me the permission to use her study questionnaire.

My greatest gratitude goes to my Husband **EMMANUEL MUGWIZA**, Thank you to allow me and supporting me throughout the journey of studies. This was a great sacrifice, thank you.

Special thanks to my family members who encouraged me along the journey of studies.

My gratitude goes to my colleagues with whom we used to discuss and have common understanding on the research process.

LIST OF ACRONYMS AND ABBREVIATIONS

AICU: Adult Intensive Care Unit

CHUK: Centre Hospitalier Universtaire de Kigali

ENT: Ear, Nose and Throat

HP: Hydrogen Peroxide

ICU: Intensive Care Unit

PICU: Pediatric Intensive care Unit

SICU: Surgical Intensive Care Unit

SPSS: Statistical Package of Social Sciences

VAP: Ventilator Associated Pneumonia

CHAPTER 1. INTRODUCTION AND BACKGROUND TO THE STUDY

1.0. INTRODUCTION

Oral care in the ICU is a frequent and universal skill which is found within the nursing scope and it helps to ensure that ICU patient's mouths are cared for.(Abidia, 2007, p. 4) .

Comprehensive oral care in critically ill patients includes oral cavity assessment, tooth brushing, use of moisture on the lips to prevent crackling, suctioning the mouth and oropharynx and also some other related care including repositioning and securing endotracheal tube which might have been displaced during the procedure.Tracheotomy care and endotracheal suctioning also are included in oral care procedure (Human *et al.*, 2007, p. 61)

1.1. BACKGROUND OF THE STUDY

Evidence shows that monitoring oral hygiene in patients on ventilation is one of the major routes to prevent VAP. Ineffective oral care leads to the colonization and aspiration of microbes that can lead to pneumonia, a reduction of the salivary volume, dryness of the mouth, formation of dental plaque, gingival swelling, and colonization of bacteria, stomatitis, dental infections and dental caries.

Mouth care has been proven to be an important nursing procedure.Unfortunately many nurses consider it as a comfort procedure that helps patients to feel better instead of reflecting about mouth care as an action that prevents accumulation of pathogens in the oral cavity(Cherian and Karkada, 2015, p. 9).

Furthermore Grap cited in (Cherian and Karkada,(2015, p. 9) stated that bacteria can easily travel from the mouth to the lungs in compromised patients because the endotracheal tube has impaired the natural protective barrier for the lungs.

In ICU, intubated clients might have other devices like a nasogastric tube in mouth or nose which prevent clearance of secretions and yet stimulate them. These clients may also present signs of infection including fever and all of this result in loss of fluid and breathing through the mouth which will cause bacterial overgrowth and loss of salivary effectiveness that has a role of removing bacteria from the oral cavity.

Ventilated patients cannot perform the simplest activity like oral hygiene for themselves due to their critical condition, thus ICU nurses need to be frontline health care providers and perform oral care for ICU patients (Miranda *et al.*, 2016),

(Shi *et al.*, 2010) furthermore showed that keeping the teeth and mouth clean can prevent buildup of plaque on teeth and remove secretions thereby reduce the risk of having Ventilator Associated Pneumonia which is responsible for prolonging hospitalization and increases ICU patients' mortality rate. Another study showed that oral care done by using chlorhexidine either as mouth rinse or gel reduces the odds of ventilated Associated Pneumonia in adults by 40% (Hillier *et al.*, 2013, p. 38).

Many authors showed that there is a change within 48 hours of admission where the composition of oropharyngeal flora of critically ill patients undergoes a change from the usual predominance of gram positive streptococci and dental pathogens to predominantly gram negative organisms, which then constitute more virulent flora, including pathogens that can cause Ventilator Associated Pneumonia within hours or days (Miranda *et al.*, 2016), (Human *et al.*, 2007, p. 62), (Munro and Ruggiero, 2014, p. 168), (Abidia, 2007, p. 2), and (Saddki, Elani Mohamad Sani and Mon Tin-Oo, 2014, p. 1). This made (Pear, (2007) to suggest that oral care can be essential for prevention of ventilated Associated Pneumonia .

In addition (Shi *et al.*, 2010) showed that ventilated patients, are most of the time unconscious sedated, and helped by ventilator machines to breathe in and out as they are unable to breathe themselves. The utilization of ventilator machines for more than 48 hours possibly will result in Ventilator Associated Pneumonia (Hillier *et al.*, (2013, p. 39) which is a grave complication for ICU clients who have already critical conditions.

(Pear, (2007) and (Atay and Karabacak, 2014, p. 826) showed severity of the disease which results in patient's intubation, inability to eat and drink per mouth, fluid balance instability, a wide utilization of morphine for pain management as factors which contribute to decreased salivary flow. (Human *et al.*, (2007) added a need to maintain a slightly negative fluid balance to support cardiac and respiratory function. And again use of medication such as diuretics and inotropes like adrenaline also are considered as factors contributing to decreased salivary flow in ICU patients.

In addition (Miranda *et al.*, (2016), showed that changes in salivary flow caused by medications aggravate and disturb the safety of buccal cavity . These authors maintain that such changes

include biofilm formation, worsened by stress and anxiety of these clients resulting in dental caries, plaque formation and infections due to lack of antimicrobial and cleansing activity that was used to be done by client him or herself who is unable due to his/her critical condition, and degradation of some bacterial cell walls inhibiting bacterial growth normally done by saliva (Kreitz, 2007, p. 2) and (Dodds *et al.*, 2015)

ICU Nurses are called to be aware that maintaining oral hygiene to prevent Ventilator Associated Pneumonia is an infection control priority and comfort care, as they are frontline care providers. (Booker *et al.*, 2013)

As stated by Goldie (2013) the importance of mouth care is to maintain the oral cavity of critically ill patients healthy and promote wellbeing for these ICU patients. The last one are most of the time ventilated, sedated and this makes it very crucial to maintain their buccal cavity healthy. Unfortunately Goldie (2013) revealed that it is not reflected in ICUs and poor oral hygiene for these ICU patients exposes them to hospital acquired infection especially Ventilator Associated Pneumonia(VAP).

Keyt *et al.* (2014), showed that oral care, and removal of subglottic secretions were proved to be successful strategies in prevention of Ventilator Associated Pneumonia.

When intubated critically ill patients do not receive effective comprehensive oral care, dental plaque and hardened bacteria deposits may develop on teeth within 72 hours and this is followed by gingivitis. Also when oral care is not done, unconscious ICU patients may aspirate secretions which will cause infections in the lungs and result in Ventilator Associated Pneumonia.

Miranda *et al.*, (2016), showing the results of reports done in Brasilia mentioned that Brazilian hospitals gave little credibility to dental activities, including oral hygiene. Furthermore they do not recognize the close link between oral hygiene and prevention of systemic diseases. (Miranda *et al.*, 2016), suggest that health care professionals must be made aware that oral hygiene may improve the health conditions of hospitalized patients. This motivated the researcher of the current study to explore Rwandan ICU nurses' knowledge, practices and how they perceive mouth care procedure for ICU clients as no study has not yet done in Rwanda about comprehensive mouth care.

1.2. PROBLEM STATEMENT

Ventilator Associated Pneumonia is a major cause of mortality and morbidity in the intensive care unit (Munro and Ruggiero, 2014, p. 163)

Goldie (2013) has shown that oral cavity and other parts of the mouth are perfect medium in which bacteria can live and thrive. Furthermore, Soh *et al.*, (2012) has revealed that aspiration of oral colonization has been identified as one of the common causes of Ventilator Associated Pneumonia and added that, colonization is a result of poor oral care.

In addition to prevention of infection, (Ibrahim, Mudawi and Omer, (2015) showed that quality of life and personal dignity have been reported to be affected by oral health. Again(Ibrahim, Mudawi and Omer, 2015) mentioned that poor oral health has a negative effect like poor appetite which impairs nutritional status and leads to malnutrition which in turn has a negative effect on general health.

(Soh *et al.*, 2012)showed that VAP accounts for over 47% of all infections in ICUs, and again the reported rate of VAP in Northern American and European ICU settings is 1-53 cases per 1000 ventilator days which affect up to 30% of patients on mechanical ventilation. (Elliott, 2015).This was also supported by (Hillier *et al.*, 2013, p. 39) who showed that the incidence of VAP is estimated at 6.2 per 1000 days of treatment with mechanical ventilation.The study furthermore showed that one single incidence of VAP costs \$30 000 to \$40 000, and can also lead to more prolonged use of ventilator, increase length of stay in the ICU,as well as the cost of treatment, (Lin *et al.*, 2011) added high mortality among patients who had VAP as nosocomial infection..

In addition the study done by Behari et.al (2015) on the incidence of VAP in ICU showed that of 32 patients evaluated, 8 of them(meaning 25%) had VAP and also (Ibrahim, Mudawi and Omer, (2015) in Iran, showed statistics of VAP and mentioned that it affected 39.7% of ICU mechanically ventilated patients.

(Cherian and Karkada, (2015, p. 9) showed that monthly VAP rates in SICU have been rising from 8.54 in February 2012 to 14.1 in March 2012 in Dubai Hospital and added that this was linked to the fact that oral care was not considered as a priority by many nurses, and this contributed to the decrease of its frequency and increase in the possibility of contaminated secretions in the patient's oral cavity.

(Human *et al.*, (2007) showed how serious poor oral hygiene can lead to the Ventilator Associated Pneumonia which had mortality rate ranging between 24% and 50% and this may increase in high risk population up to 74%.Fortunately this is completed by(Cherian and Karkada,(2015, p. 10) , who showed that oral care practices needed to be improved in order to

prevent VAP. This was emphasized by (Soh *et al.*, (2012) who realized that effective oral care prevents the formation of dental plaque which often provides a reservoir for microbes that cause Ventilator Associated Pneumonia and the latter contributes to delayed recovery and increases patients' mortality rates and yet it could be preventable.

In addition to that, the study done by (Trieger, (2004, p. 24) stated that "The mouth really is part of the body ." which was delegated to dentistry and emphasis is directed to only caries and periodontitis. Most of the time people consult dentists when they are conscious but in ICU people are unconscious and their oral cavity is crowded by different tubes where they really need health care providers to help them with oral care in such critical condition which prevents nosocomial infection especially Ventilator Associated Pneumonia.

In Rwanda anecdotal evidence shows that ventilated patients receive mouth care on an irregular basis and this depends on nurses who are on duty and some health care facilities do not have a protocol or guidelines helping ICU nurses to perform mouth care for ventilated patients. Yet Hillier *et al.*, (2013, p. 40) showed that having a protocol in place was reported to increase the quality of oral hygiene and consequently decreases VAP rates.

Miranda *et al.*, (2016) stipulated that dentistry practice in hospital aims at prevention and elimination of potential infection sources, including inflammation and painful symptoms which might be caused by oral problems and may directly affect systemic conditions of critically ill patients and delay their recovery, Miranda *et al.*, (2016) further showed that in Brasilia dentistry department does regular visit to ICU patients.

No documented study has been done in Rwanda to show up knowledge, practices and perceptions of ICU nurses about mouth care for ventilated patients, secondly there is no study done to show the prevalence of VAP in Rwandan ICUs.

1.3. THE AIM OF THE STUDY

The aim of this study is to explore intensive care unit (ICU) nurses' knowledge, practices and perceptions about comprehensive mouth care for ventilated patients at one specific university teaching Hospital, Kigali, Rwanda.

1.4. RESEARCH OBJECTIVES

1. To assess nurses knowledge regarding comprehensive oral care to ventilated patients.
2. To identify theoretical or clinical oral care training ICU nurses have.
3. To establish the extent to which mouth the care procedure is done in ICU
4. To determine the availability and adherence to the protocol in performing oral care
5. To describe nurses' perceptions about comprehensive mouth care

1.5. RESEARCH QUESTIONS

1. What level of knowledge do ICU nurses have about comprehensive mouth care?
2. What theoretical or in service training do ICU nurses have regarding comprehensive mouth care?
3. To which extent mouth care is done to ventilated patients in ICU?
4. Do ICU nurses have a protocol available and adhere to it while performing comprehensive mouth care?
5. How do nurses perceive comprehensive mouth care for ventilated patients?

1.6. SIGNIFICANCE OF THE STUDY

Comprehensive mouth care can reduce the incidence of Ventilator Associated Pneumonia which affects approximately 27% of ICU patients Perrie, Scribante and Windsor,(2011) and Lin *et al.*, (2011)in their study done in Taiwan showed that oral care is included in fundamental nursing curriculum but some schools do not emphasize on its importance for ventilated patients. Results of research done in different countries like Taiwan, South Africa, Malaysia, have shown that comprehensive oral care can reduce the incidence of hospital acquired infection especially Ventilator Associated Pneumonia.

These study results will make the ICU nurses aware of gaps and strengths in their knowledge, practices and perceptions about comprehensive mouth care for ventilated patients and correct the gaps and build on strengths.

These results will inform the development or review of protocols as the study revealed the need for availability and use the mouth care protocol.

In nursing education it will be helpful as evidence showed that knowledgeable nurses performed mouth care well for ventilated patients which prevent Ventilator Associated Pneumonia for these clients. This will be useful in the development of content for syllabi or continuing professional development to teach nurses working in ICU.

In nursing research it forms a basis for further research like extending the study to more referral hospitals in Rwanda.

1.7. DEFINITION OF KEY TERMS

Comprehensive oral health care

In this study, comprehensive oral care means oral health assessment, cleaning the mouth of critically ill patient, by brushing teeth and gums to remove plaque, suctioning the mouth and subglottic area and perform tracheostomy care to remove secretions, and using moisturizers to prevent lips cracking.

Intensive care unit: a special unit in the hospital which is concentrated with special equipment and especially trained personnel for the care of seriously ill and ventilated patients requiring immediate and continuous attention. It can be called also critical care unit (Saunders, 2003). In this study intensive care unit means a specialized unit in the referral hospital equipped by special materials and trained personnel aims to care for ventilated patients and non ventilated patient who are critically ill and need closer monitoring and attention.

Intensive care nurse: A critical care nurse is a licensed professional nurse who is responsible to ensure that ICU patients who are ventilated and their families receive optimal quality care during hospitalization period. (American Association of Critical-Care Nurses (2016) In this study intensive care nurse means every licensed nurse who will be found caring for ICU patients.

Knowledge: In this study knowledge is defined as the amount of information that ICU nurses have about comprehensive mouth care for ventilated patients in ICU.

Perception regarding mouth care: the ways in ICU nurses think about or understand mouth care for ventilated patients.

Practices regarding mouth care: In this study practice means the manner in which or way ICU nurses perform comprehensive mouth care for ventilated patients.

1.8. STRUCTURE OF THE STUDY

This study is structured into 6 chapters. Chapter one presents the conceptualization of the study starting with the background and problem statement, then the study purpose/aim, specific objectives, and associated research questions, the significance of the study, operational definition of terms ending with the introduction of the structure of the whole research report or thesis. Chapter is the review of literature to identify what is known and studied including gaps in the areas of study. Chapter three presents the methodology of the study including the ethical considerations of the study. Chapter four presents the results. Chapter five discusses the findings and limitations of the study. Finally chapter six presents the conclusions and recommendations based on the study.

1.9. CONCLUSION

Chapter one showed consequences which might happen if comprehensive mouth care is not done properly for all ICU patients, and different studies done on mouth care for ventilated patients in other countries. This chapter also highlighted the study significance, aim, specific objectives and research questions. The chapter also defined the operational definitions which were used along the research study.

CHAPTER 2. LITERATURE REVIEW

2.0. INTRODUCTION

The aim of literature review is to provide the author of the current study with an overview of the ideas, theories, and significant literature currently published similar to the topic under search. The literature reviewed has focused on: comprehensive mouth care in intensive care units and is a summary of data and information from different studies done in ICU on knowledge, practices and perceptions of ICU nurses in different countries.

2.1 LITERATURE REVIEW SEARCH

Pub Med and Google search engines were used to look for information related to the current study. The present researcher used different key words like Intensive care unit, oral hygiene of critically ill patient, ventilated patients, and mouth care, mouth washes used in comprehensive oral care, knowledge, perception and practices of ICU nurses. This assisted the author to find the latest studies, articles, guidelines published on the topic under study. Most of the articles and studies considered were published from 2002-2016.

2.2 EMPIRICAL LITERATURE REVIEW

2.2.1. KNOWLEDGE, PRACTICES AND PERCEPTIONS OF ICU NURSES ABOUT COMPREHENSIVE ORAL CARE

The study done in Botswana by (Sarefho,(2011)had showed that 18% of nurses were knowledgeable about the importance aspects of oral care, 59% had received training on comprehensive oral care and 97% of the participants requested further updates on comprehensive oral care. Furthermore, hundred percent of nurses rated oral care at high priority and 91% ranked it very important for critically ill patients. The tooth brush and tooth pastes were used by 85% and 50% of them were using only mouthwashes.

Another study done in Khartoum state by (Ibrahim, Mudawi and Omer,(2015) showed that 97.4% of ICU nurses had high knowledge of the importance of mouth care for ICU patients and similarly for the priority of mouth care but unfortunately only 20% of nurses were found to apply good practice. Among the participants of this study only 64.5% of the nurses received training in mouth care provision, and 81% of them indicated that further training would be beneficial. The

results of this study highlighted the need for the ICU to have protocols and adoption of advanced training for ICU nurses.

The gap of above 2 studies is lack of results about how nurses perceived comprehensive oral care in ICU.

Most of nurses stated that they had adequate time and supplies to provide oral care and the majority of them had had some formal training in oral care, but would appreciate an opportunity to improve their knowledge and skills.

Soh et al.,(2012), did a pilot study to determine methods used, frequency, and attitude of nurses towards oral care provided to mechanically ventilated patients and the survey revealed that 73.4% of the nurses used cotton with forceps, 65% used forceps and gauzes or spatulas ,36% used gauzes and then 50.8% used tooth brush.

In addition nurses of this hospital further reported positive attitude towards providing oral care to ventilated patients. In conclusion Soh *et al.*, (2012) showed that there is a need to have a standardized oral care protocol in ICUs to provide quality of oral care to ventilated patients. The results of the study done by Cherian and Karkada, (2015) showed that knowledge and practice of nurses about oral hygiene was markedly significant and their knowledge and oral care practices obtained a good score and the oral hygiene improved to 96.7%.

Cherian and Karkada, (2015) also noticed that nurses in ICU had no standard pattern and they had a variety of oral care routines and oral suctioning.

This study also revealed that subglottic region was not suctioned because nurses did not know its importance

The results of the survey done by Perrie, Scribante and Windsor,(2011)in South Africa showed that almost all the nurses perceived oral care to be a high priority and nurses were generally aware of the most likely mechanism of acquiring pneumonia. The type and frequency of oral care varied widely.

Hillier *et al.*, (2013) reported that having a protocol in place increased the quality of oral hygiene and decreased VAP rates. These authors added that implementation of oral care protocols and/or education programs have demonstrated positive impact on VAP rates.

(Hajbaghery, Ansari and Fini, (2014, p. 24) showed that on a scale of 1–10, nurses rated oral care with a score of 5.7 and only about 21% of nurses marked the “prevention of ventilator associated

pneumonia” (VAP) as the aim of oral care. Also, 21.5% stated that they do not administer oral care for patients; tooth brush was only used in 14.6% of cases for oral care.

2.2.2. CRITICAL REVIEW AND RESEARCH GAP IDENTIFICATION

The study done by Perrie, Scribante and Windsor, (2011) does not show specific statistics of the results, the author used the term majority and most, which does not seem to be specific to show at which level participants perceive, how they perform and their knowledge about oral care.

Perrie, Scribante and Windsor, (2011) , concluded by showing that there is a need to have standardized oral care protocols in ICUs in order to improve quality of oral care provided to ventilated patients.

2.2.3. IMPORTANCE OF COMPREHENSIVE MOUTH CARE

Abidia, (2007, p. 4) showed that oral care contributes to the achievement and maintenance of oral cleanliness, prevention of infection, to keep oral mucosa moist and promote patient comfort.

In addition Saddki, Elani Mohamad Sani and Mon Tin-Oo, (2014) showed that effective oral care has been identified to be successful in reducing oropharyngeal colonization by pathogenic bacteria and consequently reduce the incidence of Ventilator Associated Pneumonia and other related oral problems like periodontal disease,xerostomia,halitosis,stomatitis.(Illsley, 2015, p. 3).

Oral care also minimizes bacterial proliferation and further aids in the removal of microbial plaque and help to build up and maintain soft and hard tissues healthy.(Dodds *et al.*, 2015) and (Booker *et al.*, 2013)

Goldie, (2013) and Munro and Ruggiero, (2014, p. 168), indicated that aspiration of pharyngeal secretions is documented as a risk factor for Ventilator Associated Pneumonia. Research has shown that bacteria responsible for Hospital Acquired Infection collect and colonize on the oral mucosa and in the dental plaque biofilm of intubated patients. Maintaining a clean and healthy mouth using chlorhexidine helps in prevention of plaque biofilm formation on the teeth and this is done through oral care and further decrease the rate of VAP.

2.2.4. CHALLENGES TO ORAL CARE

According to Trieger, (2004) it is difficult to perform oral care to unconscious, semi-conscious and non-cooperating patients and yet they are the one in most need of oral care procedure in ICU.Human *et al.*, (2007, p. 61) who published in the South African Journal of Critical Care

agreed with Trieger,(2004) that some care givers perceive that entering patients' mouths is considered as an invasion of privacy and this decreases the oral care performance by nurses.

Javadinia *et al.*, (2014)and Dale *et al.*, (2016) revealed and highlighted other challenges like overwhelming work load and lack of adequate personnel as the most important obstacles preventing provision of oral care.

Dale *et al.*, (2016)added aversive response like biting by patients against nurses in ICU in Ontario, Canada. (Dale *et al.*, (2016) and Lin *et al.*, (2011) further pointed out lack of training and limited opportunities for interprofessional collaboration as factors which contribute to poor oral hygiene for ICU patients. Fortunately the presence of informal based nursing curriculum was mentioned to help nurses acquire strategies of overcoming barriers to oral care.

Grap cited in Cherian and Karkada, (2015) and Ames, (2011, p. 243)showed that nurses are not comfortable to provide oral care to mechanically ventilated patients as they think that the endotracheal tube can be moved or dislodged during the procedure and this can cause harm to patients.

(Lin *et al.*, (2011)revealed more challenges like failing to give priority to oral care within the schedule of other medical activities and lack of using oral assessment tool.

2.3. THEORETICAL LITERATURE REVIEW

2.3.1. DESCRIPTION OF MOUTH CARE PROCEDURE

According to Illsley, (2015, p. 1) and (Pear, (2007) Oral care is indicated for all patients admitted to Adult Critical Care but Care should be taken with patients who are known to have a platelet count $< 30 \times 10^9/L$ and deranged clotting as there is a higher risk of bleeding .The patient should have an oral assessment on admission to the Critical Care unit performed by registered nurses and this should be repeated every 12 hours to evaluate the level of oral dysfunction and provide the appropriate patient care. The patient should be referred if found with oral Candida or ulceration to medical staff.

The Oral care should be done preferably by 2 nurses, one brushing and another suctioning the mouth along the procedure Perrie, Scribante and Windsor,(2011).The head of the bed should be kept elevated at least 30 degrees Perrie, Scribante and Windsor,(2011);(Illsley, (2015)and Cuccio *et al.*, (2012, p. 304) and Position patient's head to the side (Bonnie, Stott and Lloyd, (2002, p. 28).Brushing teeth should be done for approximately one to two minutes.(Cuccio *et al.*,

(2012, p. 304) , and brush twice per day (Nobahar *et al.*, (2016). Then Suctioning patient's mouth and oropharynx along brushing and as indicated by patient's secretion production using either, continuous subglottic suctioning or manual method. (Perrie, Scribante and Windsor,(2011).

Lips should be lubricated with a water based product every 2 hours, to keep them intact and provide natural protection from any infection. (Illsley, (2015),(Perrie, Scribante and Windsor,(2011)and the procedure should be documented on 24 hours patients 'chart.

2.3.2. EQUIPMENT USED FOR MOUTH CARE

✓ **Tooth brush:** A toothbrush is the tool of choice for providing oral care to remove debris and dental plaque (Ruth Pettit, 2015);(Bonnie, Stott and Lloyd, 2002, p. 28); (Pear, 2007) and (Atay and Karabacak, 2014, p. 826)

✓ **Cotton swab/foam stick:** - These are effective in oral mucosal stimulation and moisture delivery, but ineffective in plaque and debris removal(Pearson, Hutton and Pearson, 2002).

They are recommended for use on patients who have bleeding tendencies and low platelet counts. (Illsley, 2015, p. 1)

✓ **Tooth paste:** which contains additives such as sodium bicarbonate and fluoride have been shown to assist in removing debris accumulation on oral tissues and teeth.(Pear, 2007) and (Abidia, 2007, p. 4)

Tooth paste if used should be rinsed thoroughly from the mouth as residual sodium can dry and harden on the oral mucosal.(Illsley, 2015, p. 9)

2.3.3. MOUTH WASHES USED IN MOUTH CARE

Chlorhexidine: It was shown that use of chlorhexidine in mouth care was associated with a 30% relative reduction in VAP (Cuccio *et al.*, 2012, p. 302). (Snyders, Khondowe and Bell, (2011, p. 56) showed that treatment with chlorhexidine decreased the risk of VAP by 36% and added that use of 2% chlorhexidine may be most effective in reducing the incidence of VAP.In these two studies no decrease in mortality rate was demonstrated.

(Hillier *et al.*, (2013) and (Atay and Karabacak, (2014, p. 826) also emphasized on the use of Chlorhexidine as a product of choice and précised on its concentration of 0.12%.Some evidence

suggests that the use of chlorhexidine is preferred for cardiac surgery patients; yet, its benefits in ICUs are unknown and its routine use is not recommended for all ICU patients.(Nobahar *et al.*, 2016, p. 445)

Sodium bicarbonate mouthwash: is a mouthwash that softens the hardened mucosa but causes greater bacterial plaque accumulation compared to chlorhexidine(Nobahar *et al.*, 2016, p. 445).

Hydrogen peroxide (HP): It is an oral cleaning which is praised for its antiseptic and healing properties. It is used after brushing to kill bacteria and viruses. It has to be used carefully and not too long as it is acidic and can cause mucosal irritation if not used properly.

Nobahar *et al.*, (2016, p. 448) examined HP mouthwash use for ventilated patients and proved that ,HP has a killing effect on oral anaerobic bacteria and by disinfecting the oral cavity ,HP prevents aspiration of secretions with bacteria into the lower pulmonary tract and thus reducing the VAP occurrence.Normal saline does not have properties of killing oral anaerobic bacteria. Again Nobahar *et al.*, (2016, p. 448) showed that 3% HP mouthwash significantly reduced the incidence of VAP compared to the use of Normal saline as mouthwash.

Lemon and glycerin: While lemon and glycerin provide and, induce moisture and Softness in the mouth, but Lemon-glycerin compounds are acidic and cause drying of oral tissues therefore, its use in ICU is not recommended.(Pear, 2007)

Normal saline: The evidence of the effectiveness of normal saline rinsing as a mouthwash is not strong enough and the tendency to cause dry mouth when routinely used as mouthwash has limited its use in critical care units.(Nobahar *et al.*, 2016, p. 448)

2.3.4. LIP MOISTURIZERS

Vaseline: Vaseline is a lip moisturizer that maintains the integrity of lips with its occlusive effect that reduces trans-epidermal water loss ensuring patient comfort, as well as preventing cracking and drying of lips.(Abidia, 2007)

Water: Water is the moisturizing agent of choice for oral care which causes minimal disruption to the oral ecosystem and provides an ideal pH of 7. Water provides moisture and removes debris from the oral cavity which minimizes xerostomia. Tap water has been identified as a serious source of waterborne nosocomial infections. It is necessary to use sterile water rather than tap water for mouth care. (Illsley, 2015, p. 8) and (Atay and Karabacak, 2014, p. 826)

2.3.5. CONCEPTUAL FRAMEWORK

This study used Nursing Role Effectiveness Model and the researcher expected the nurse and the patient structural variables to influence nurses' role performance, which in turn was expected to affect patient outcome.

The model was developed by Irvine, Sidani, and McGillis Hall(2002) to guide the assessment of nurses' contribution to health care. Nurses are asked to demonstrate their contribution through the identification of nursing-sensitive patient outcomes, but this has a challenge as the patient outcome is achieved from multidisciplinary working team. For this reason the identification of nurses' contribution to patient's outcome has to be guided by a conceptual model.

The Nursing Role Effectiveness model was based on the structure, process, and outcome model of quality care.

The structure component consists of nurse, patient, and nursing unit variables that influence the processes and outcomes of health care.

The process component consists of the independent, interdependent and medical care. Nurses' independent role includes the activities of patient assessment, decision-making, nursing intervention, and follow-up. Nurses' interdependent role comprises the role functions and responsibilities which nurses share with other members of the health care team. Nurses' medical care also called dependent related role comprises the clinical judgments and activities associated with the implementation of medical orders and medical treatments.

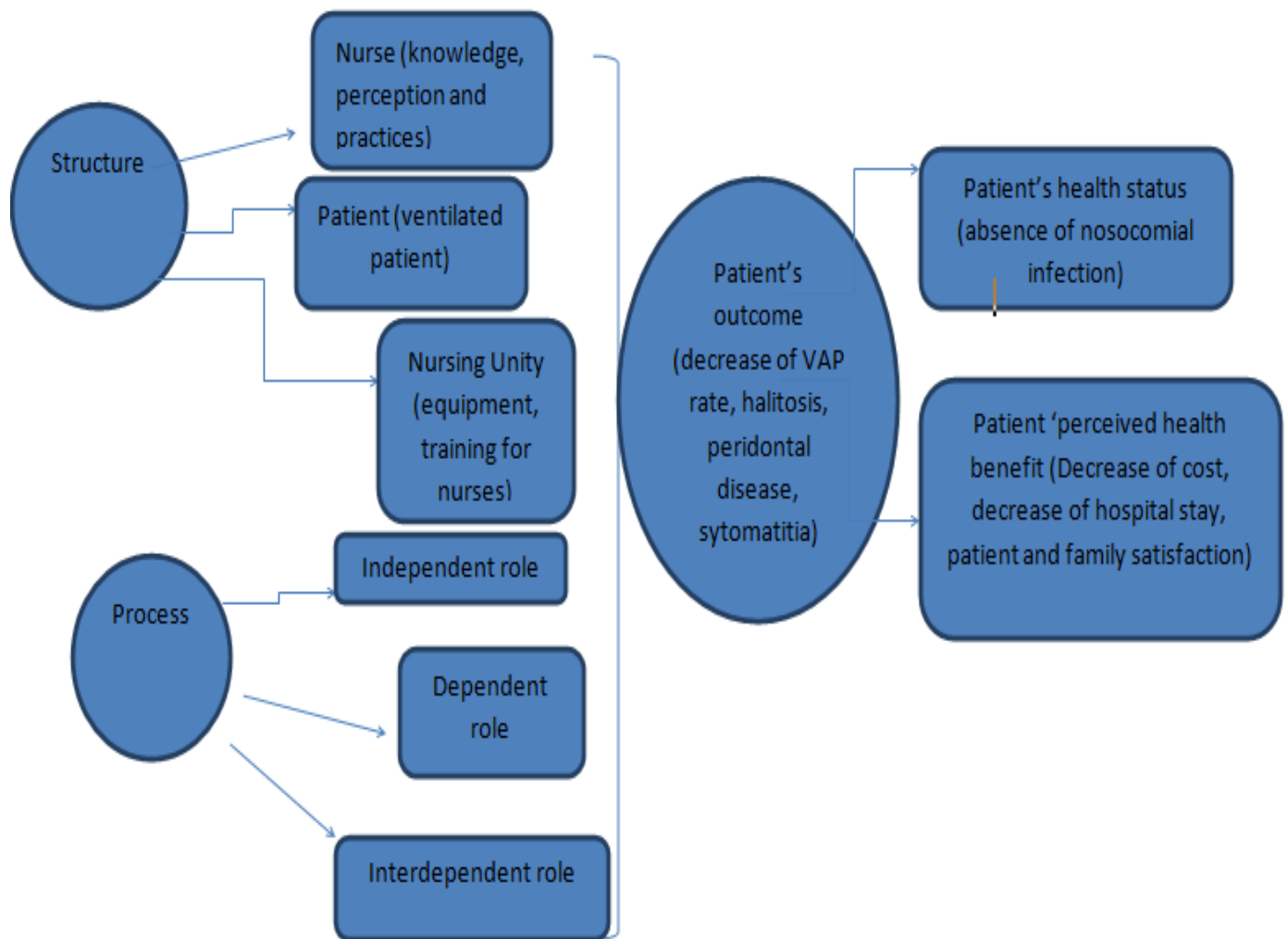
The outcome component of the model includes the patients' health status, the patients' perceived health benefit from nursing care, and the direct and indirect costs associated with nursing care.

In this study structure included qualified and licensed ICU nurses who were knowledgeable, and had skills in performing mouth care and had certain level of perception towards mouth care procedure. The nursing unit included nursing leaders who provide protocol and policies to guide this procedure, equipment necessary for this procedure, and then patient was considered a stakeholder of this procedure.

Process included independent role where a nurse was able to do initial and ongoing assessment of patient's mouth and performed mouth care independently. Inter-dependent role included intervention of other health professionals like dentists who may have needed to check on patients at certain intervals, and then dependent role also known as medical role involved the medical team when there was a need for prescribing mouth washes.

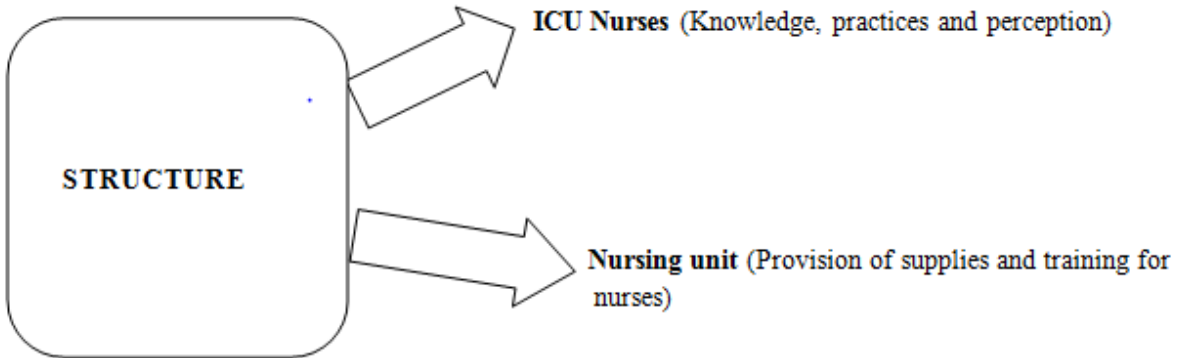
Patients 'outcome was maintenance of patients' mouth healthy without any signs of infection, no dental plaque buildup, no lips crackling ,the patients benefited from the work of multidisciplinary team and well organized nursing unity which would definitely contribute to the prevention of nosocomial infection mostly Ventilator Associated Pneumonia. The current study does not have process and patients 'outcome in its model.

Diane Irvine Doran, 2002 Nursing Role Effectiveness Model



Nursing role effectiveness model adapted from Irvine, Sidani & McGillis Hall 2002 cited in (Sarefho, 2011, p. 33)

Out of this model, the current study focused on the following variables:



2.3.6. CONCLUSION

This chapter included different studies done on knowledge, perception and practices of ICU nurses towards comprehensive mouth care for ventilated patients, key words used to search information and search engines used. It also included conceptual frame work adapted and adopted for the current study.

CHAPTER 3: METHODOLOGY

3.0. INTRODUCTION

This chapter describes the methodology used along this study and this includes study setting, showing where the current study was conducted, the study approach, the study design, study population showing who involved with the current study, sample size indicating how many participants were selected to represent the whole population, sampling strategies showing how the sample was chosen among the population. The chapter also describes the data collection instrument including its reliability and validity. Data collection methods and procedures showing how information was gathered from the selected sample, data analysis showing how collected data were analyzed. The chapter included ethical considerations and finally presents gaps and limitations of the study.

3.1. STUDY SETTING

This study was conducted at a university teaching hospital, in Kigali (CHUK) and specifically in adult and Pediatric ICUs.

The University teaching hospital of Kigali is located in the Centre of Kigali City (District of Nyarugenge), and it is the main public health institution in the country.

It was built in 1918; then in 1928, worked as a health center. It worked as a hospital in 1965. From April 1994 to 1996, the university teaching hospital (CHUK) served as a health center, a district hospital and as well as a referral hospital due to consequences of 1994 genocide which happened in Rwanda.

The current university teaching hospital formerly Kigali Hospital Center (CHK) possesses the following clinical services:

Neurology, Anesthesia and Resuscitation, Physiotherapy, Orthopedic, Dermatology, ENT, Stomatology, Ophthalmology, Pediatrics, Emergency, Intensive Care Unit, Gynecology and Obstetrics, Surgery and Internal Medicine. Adult Intensive care unit has capacity of receiving 7 ventilated patients and 32 ICU nurses plus 1 expatriate who care for ventilated patient, Pediatric unit receive 3 ventilated patients and 14 nurses who care for ventilated children.

3.2. STUDY APPROACH

A quantitative approach was used in the current study. A quantitative approach was chosen for this study as it provides precise, quantitative, numerical data and helps to test and validate theories which were already constructed about how and why phenomena occur, and help to generalize findings. This approach allows the use of sufficient and representative sample from ICU nurses. It is also useful as it helps to obtain data which allows quantitative predictions to be made.

The results of quantitative study are independent since data analysis is done by statistical software which considers statistical significance and is a very quick way, which decreases bias.

3.3. STUDY DESIGN

A cross sectional research design was used as data were collected in one specific point in time. Cross sectional design is usually inexpensive and quick research design which allowed the current researcher to collect needed information from ICU nurses within a short period of time and with minor expenses.

3.4. STUDY POPULATION

The study population included 47 registered nurses working in AICU and PICU, irrespective of marital status, age, gender, level of education and experience period in ICU.

3.5. STUDY SAMPLE

All forty seven nurses working in adult and pediatric ICUs were reached to participate in the current study.

3.6. SAMPLING STRATEGY

Total population sampling which is a type of purposive sampling was used as the size of the population the researcher was interested in, was typically small.

The list of Adult ICU and pediatric ICU nurses was created to make sure that all ICU nurses were reached, thereafter; nurses were contacted face to face to complete the questionnaire after having clarification and signed a consent form about what the study was about to find out.

3.7. DATA COLLECTION INSTRUMENT

Self administered questionnaires were distributed to 47 nurses of AICU and PICU, and this questionnaire was adapted from Sarefho, (2011) and it consists of open questions allowing free responses from respondents, and closed questions to obtain fixed answers. The entire questionnaire consisted of 39 questions with room for the respondent to comment if necessary. The questionnaire was created to generate information in four broad areas demographic data, extent of knowledge ,nurses' perceptions, and nurses oral care practices.

Section A is made of demographic data where age of participants were categorized according to Petry, (2002, p. 92) into 3 categories and this includes young adults (18-35 years old),middle aged adults(36-55 years old) and older adults(over 55 years old).

Questions 1 to 6 asked for personal data, including age, gender, qualification category, and length of nursing experience, length of ICU experience and nationality of study participants.

Section B is made of 9 questions regarding knowledge of ICU nurses about comprehensive mouth care for ventilated patients.

Section C is made of 8 questions regarding perception of ICU nurses about comprehensive mouth care for ventilated patients.

Section D contains questions on oral care practices and is made of 15 questions.

Section E is made of 2 questions asking about availability and adherence to oral care protocol.

For scoring, 1point was given for each correct response in section B (Knowledge), section C(positive perception) and D (oral care practice), and 0 point was given to wrong responses in all section A,B,and negative perception in section C.

Respondents were categorized for level of knowledge, perception and practices according to(Maheshwari, and Ramnani, 2014, p. 5) and (Elbokhary, Osama and Al-khader, 2015, p. 93) who stated that respondents who scored 75% and above were considered to have good knowledge, practices and positive perception, those who scored between 50-74% were considered to have moderate/average knowledge,practice,and perception and those who scored less than 50% were considered as having poor knowledge, practice and perception.

3.8. RELIABILITY AND VALIDITY OF STUDY QUESTIONNAIRE

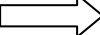

Polit and Beck, (2011, p. 373) define reliability as the consistency with which an instrument measures an attribute. The less variation an instrument produces in repeated measurements, the higher its reliability. For this current study, study questionnaires were distributed twice in

different period to ICU nurses from another hospital different from study site. This was done by the current researcher to find out if the questionnaire was capturing what is supposed to capture. It also ensured its stability as it was considered as test and retest of study questionnaire and if it gives same results from different occasions it would be considered as stable study questionnaire. The instrument went through reliability test and results produced a Cronbach alpha 0.645 for perception and 0.074 for practices.

Validity is defined as the degree to which an instrument measures what it is supposed to measure.(Polit and Beck, 2011, p. 377)

Content validity concerns the degree to which an instrument has an appropriate sample of items for the construct being measured and adequately covers the construct domain.(Polit and Beck, 2011, p. 377–378).For this current study the content validity was measured where the researcher used a table containing two columns. One column contained specific objectives and another one contained questions asked in study questionnaire to find out if every specific objective had related questions. This helped the current researcher to capture complete information from ICU nurses who responded to these questions and helped the current researcher to achieve the aim of this study. See table 1 below

TABLE 1 CONTENT VALIDITY OF DATA COLLECTION TOOL

OBJECTIVES OF THE STUDY	NUMBER OF QUESTIONS ON QUESTIONNAIRE
✓ To assess nurses knowledge regarding comprehensive oral care to ventilated patients.	✓ 2.1 ✓ 2.2 ✓ 2.3 ✓ 2.4 ✓ 2.5 ✓ 2.6 ✓ 2.7 ✓ 2.8 ✓ 2.9
✓ To identify theoretical or clinical oral care training ICU nurses have.	✓ 2.11 ✓ 2.12 ✓ 2.13. ✓ 2.14
✓ To establish the extent to which mouth the care procedure is done in ICU	✓ 4.1  4.13 ✓ 4.14 ✓ 4.16
✓ To determine the availability and adherence to the protocol in performing oral care	✓ 5.1 ✓ 5.2
✓ To describe nurses' perceptions about comprehensive mouth care	✓ 3.1  3.6 ✓ 3.7 ✓ 3.8

3.8. DATA COLLECTION METHODS AND PROCEDURES

After securing permission for data collection from ethical committee of university teaching hospital, appointment and first meeting with hospital management was planned to explain the process and seek suitable dates for data collection.

On agreed date, the researcher met ICU unit managers who communicated to ICU nurses that there was a research which was exploring ICU nurses 'knowledge, perceptions and practice about mouth care for ventilated patients. The researcher was given time to meet with study participants individually at break time to explain the research process, benefits and participants rights.

The researcher was around in ICU to assist any study participant who might have questions related to the study and provide responses accordingly. A written consent was signed by each study participant before completing the study questionnaire.

The questionnaire was written in French and English and distributed by the researcher to adult ICU nurses and pediatric ICU nurses during break time to avoid interruption and disturbances of unit activities.

The questionnaires were collected the by researcher the next day after the nurses had completed and deposited them in a sealed wooden box which was locked and left in the unit manager's office to give ICU nurses enough time for completing the study questionnaires and avoid interruption in their daily care for patients and ensure confidentiality through the use of locked wooden box.

3.9. DATA ANALYSIS

SPSS version 21 was the statistical software package that was used for analysis. Descriptive statistics were used then cross tabulation was done to find any association among variables using Pearson's chi square test.

3.10. ETHICAL CONSIDERATIONS

The ethical clearance to conduct the current study was granted by the Internal Review Board of the University of Rwanda, College of Medicine and Health Sciences. The given ethical clearance together with recommendation letter from University of Rwanda were given to Kigali Teaching

Hospital formerly called CHUK, which gave also an ethical clearance letter allowing the researcher to start data collection in Intensive Care Units.

The researcher went to meet ICU managers and found unit managers were in a workshop by that time, then the appointment date was fixed through phone calling to have first meeting with them. We all respected the appointment agreed on and met to clarify the current study's intention. Unit managers allowed the present researcher to meet AICU and PICU nurses of Kigali Teaching Hospital. Researcher was given 15minutes after morning staff meeting to introduce herself and give a summary of the study which was going to be conducted. AICU and PICU agreed on signing informed consent and complete study questionnaires without any complications.

The present author and study participants agreed to complete study questionnaire during break time to avoid disruption of the ward routine activities.

Study participants were well informed that the data would be collected and kept confidential where soft copies would be kept in a computer locked with a password known only by researcher and hard copies would be kept in a locked wooden cupboard and the key kept by the current researcher.

The findings of this study would only be used for academic purposes and its recommendations would be helpful in ICU patients nursing care. The study questionnaire would be completed anonymously with no names expected to be filled in. The questionnaire was structured in English language then translated English version to French version to facilitate French speaking nurses to participate in the study easily. Nurses had the right to withdraw from this study at any time.

Refer to annexes 3 and 4 for informed consent and information document.

3. 11. PROBLEMS AND LIMITATIONS OF THE STUDY

3. 11.1. Problem

- ✓ The study was mixed with other academic activities that the researcher had to attend and participate fully as academic requirement.

3.11.2. Limitations

- ✓ Data on practice were self reported instead of observing nurses doing comprehensive mouth care for ICU patients.

- ✓ The sample size was small. Small sample sizes may fail to detect differences at analysis, making it difficult to generalize results beyond the study sample
- ✓ Descriptive study cannot be generalized beyond the study population

3.12. CONCLUSION

A quantitative descriptive approach was used for the current study; cross sectional design and total population sampling were used to collect data from 47 ICU nurses working in ICU.

CHAPTER 4. PRESENTATION OF RESULTS

4.0. INTRODUCTION

This chapter aims to present the results and give meaning to different variables used during data collection and this task was facilitated by use of SPSS version 21. Demographic data, knowledge, perceptions data and practices are presented in different sections.

4.1. DESCRIPTION OF SOCIAL DEMOGRAPHIC DATA

Demographic data included age, gender, level of education, and length of experience in nursing, length of experience in ICU and nationality of study participants. Results are summarized in table 2

The age of participants were grouped into 3 groups including young adults (18-35 years old), middle aged adults (36-55 years old), older adults (55 years and over). (Petry, 2002).

Results show that, the youngest ICU nurse was 22 years old and the oldest was 54 years old. The mean age was 34 years, the median is 35 years and mode was 36 years. The majority of ICU nurses [25(53.2%)] were found in young adult group (18-35 years old) and minority [22(46.8%)] was between 36-55 years old, no study participant was found in older adult group (55 years and over).

Females were 40 (85.1%) in ICU nurses and male were only 7(14.9 %). Nurses with advanced diploma were 33(70.2 %), then 13(27.7 %) were bachelor's degree holders and 1(2.1 %) had graduate degree.

Table 4.1 shows that 40(85.1 %) had been nurses for 1 year and above, while 6(12.8 %) had been nurses between 1-11 months and 1(2.1%) had been working as a nurse between period of 1-7 days.

Results show also that 36(76.6%) ICU nurses had been working in ICU for 1 year and above and 7(14.9%) had working experience in ICU between 1-11 months, while 2(4.3%) had working experience in ICU between 1-3 weeks and 1-7 days each.

The majority of ICU nurses representing 46(97.9 %) were Rwandan citizens and 1(2.1 %) was a non citizen participant working in ICU.

TABLE 2: SOCIAL DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANT N=47

		Frequency	%
Age categories	young adults	25	53.2%
	middle age adults	22	46.8%
Gender	male	7	14.9%
	female	40	85.1%
Level of nursing education	Diploma	33	70.2%
	bachelor's degree	13	27.7%
	Graduate degree	1	2.1%
Length of nursing experience	1-7days	1	2.1%
	1-11months	6	12.8%
	1 year and above	40	85.1%
Length of experience in ICU	1-7days	2	4.3%
	1-3weeks	2	4.3%
	1-11months	7	14.9%
	1year and above	36	76.6%
Nationality	non-citizen	1	2.1%
	citizen	46	97.9%

4.2. LEVEL OF KNOWLEDGE OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS

The following results showed that 9 (19.1 %) of ICU nurses had good knowledge about mouth care and 36(76.6 %) ICU nurses' knowledge about comprehensive mouth care was at moderate level and then 2(4.3%) had poor knowledge. See table 3

TABLE 3 LEVEL OF KNOWLEDGE OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS

Levels of Knowledge	Frequency	Percent
Poor knowledge	2	4.3
Moderate knowledge	36	76.6
Good knowledge	9	19.1
Total	47	100.0

4.2.1. DISTRIBUTION OF GRADE ABOUT KNOWLEDGE SECTION AMONG THE STUDY PARTICIPANTS

The following results show the details about each question asked to ICU nurses, and they show that 27(57.4 %) ICU nurses knew each procedure which should be included in comprehensive mouth care, while 2(4.3 %) did not know any procedure which is included in comprehensive mouth care.

Table 4.shows also that 37(78.7%) ICU nurses responded well on the question which was asking the tissue which is less important when assessing oral health and 10(21.3%) did not know that tissue. Thirty four (72.3%) responded correctly and mentioned dental plaque as a sign which will make them to suspect poor oral health while 11(23.4%), gave gum bleeding as a sign and this was not very true as there might be other oral problems which can cause gums to bleed, and 2(4.3%) did not know any sign which will allow them to suspect poor oral care. Eight (17.0%) responded accurately and mentioned gram negative organisms as oral flora which is predominant in ventilated patients while 25(53.2%) mentioned that both gram negative and positive are predominant in ventilated patients.

A small majority [27(57.4 %)] knew that there are some drugs which have adverse reaction on salivary flow and 25(53.2 %) mentioned sympathomimetic class of drugs which have an impact of decreasing salivary production (xerostomia).

When nurses were asked the most nosocomial infection which is associated with poor oral care, only 2(4.3%) mentioned ventilator associated pneumonia and 13(27%) mentioned pneumonia

only, then 32(68.1%) mentioned other responses like staphylococcus pneumonia, klebsiella, pseudomonas, candidiasis, stomatitis,teeth decay and some ICU nurses did not give any response to this question.

Asking ICU nurses to show how many patients in ICU needed comprehensive oral care, 32(68.1%) mentioned all patients while 15(31.9%) mentioned that not all patients needed comprehensive oral care.

Regarding the question asking ICU nurses who carries out comprehensive oral care for ICU patients,37(78.7%) responded bed side nurses as responsible persons for comprehensive mouth care while 10(21.3%) mentioned care givers , nurses and doctors,all,all patients and some of ICU nurses did not give any response to this question. See table 4.3 below

TABLE 4 DISTRIBUTION OF GRADE ABOUT KNOWLEDGE SECTION AMONG PARTICIPANT N=47

		Frequ ency	%
Comprehensive oral care includes	no correct response	2	4.3%
	endotracheal suctioning and moisturing of lips	5	10.6%
	brushing teeth, suctioning and moisturizing the mouth cavity	13	27.7%
	oral assessment, brushing teeth, endotracheal suctioning and moisturizing oral cavity	27	57.4%
Tissues are less important when assessing oral health status	Others	10	21.3%
	Trachea	37	78.7%
Signs do u think would make you suspicious of poor oral care	Others	2	4.3%
	bleeding gums	11	23.4%
	dental plaque	34	72.3%
Which oral flora is predominant in ventilated patients?	none of the above	0	0.0%
	different strains of pathogens	5	10.6%
	both 1 and 2	25	53.2%
	gram positive streptococci and dental pathogens	9	19.1%
	gram negative streptococci and dental pathogens	8	17.0%
Are there drugs which adversely affect oral health in ventilated patients?	Others	20	42.6%
	Yes	27	57.4%
Which class of drugs Commonly used in ICU interferes with salivary production in critically ill patients?	Others	22	46.8%
	Sympathomimetic	25	53.2%
Which is the most common nosocomial infection	Others	32	68.1%
	Pneumonia	13	27.7%
	VAP	2	4.3%
How many patients need oral care in ICU?	Others	15	31.9%
	All	32	68.1%
Who carries out comprehensive oral care in your unit?	Others	10	21.3%
	bedside nurse	37	78.7%

4.3. PERCEPTION LEVEL OF NURSES ABOUT COMPREHENSIVE MOUTH CARE

Table 5 states that 36 (76.6 %) ICU nurses perceived comprehensive mouth care for ventilated patients as good level, 10(21.3 %) perceived comprehensive mouth care at moderate level and then 1(2.1 %) perceived comprehensive mouth care at poor level.

TABLE 5 PERCEPTION LEVEL OF NURSES ABOUT COMPREHENSIVE MOUTH CARE N=47

LEVELS OF PERCEPTION	Frequency	Percent
Poor perception	1	2.1
Moderate perception	10	21.3
Good perception	36	76.6
Total	47	100.0

4.3.1. DISTRIBUTION OF SCORES AMONG PARTICIPANTS ON THEIR PERCEPTIONS ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS

Results show that 32(68.1 %) ICU nurses strongly agreed that comprehensive mouth care is a high priority for ventilated patients while 3(6.4 %) ICU nurses strongly disagreed about this statement. Fourteen (29.8%)ICU nurses strongly disagreed that comprehensive mouth care contributes less to ventilated patients health and well being while 8 (17.0%)ICU nurses strongly agreed that comprehensive oral care contributes less to ventilated patients health and well being 9(19.1%) ICU nurses strongly agreed that cleaning oral cavity for ventilated patients is an unpleasant task and 13(27.7%) strongly disagreed that cleaning oral care is an unpleasant task. Fifteen (31.9%) strongly disagreed that cleaning oral cavity of ventilated patient causes patients discomfort whereas 3(6.4%) strongly agreed that cleaning oral cavity of ventilated patients causes patients discomfort. Eighteen (38.3 %) agreed that oral cavity of ventilated patients is difficult to clean while 12(25.5 %) disagreed that, the oral cavity of ventilated is difficult to clean.

Results also show that 18(38.3%) ICU nurses strongly disagreed that oral cavity of ventilated patients get worse no matter what an ICU nurse can do while 7 (14.9%) strongly agreed that oral cavity of ventilated patients get worse no matter what an ICU nurse can do.

Seventeen (36.2 %) ICU nurses ranked the importance of examining a ventilated patient's mouth at 10 on admission while 1(2.1 %) ranked the importance at 1. See table 6.

TABLE 6 DISTRIBUTION OF SCORES AMONG PARTICIPANTS ON THEIR PERCEPTIONS ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS N=47

		Frequency	%
comprehensive oral care is a very high priority in ventilated patients	strongly disagree	3	6.4%
	Disagree	1	2.1%
	Uncertain	1	2.1%
	Agree	10	21.3%
	strongly agree	32	68.1%
comprehensive oral care contributes less to ventilated patients health and well being	strongly agree	8	17.0%
	Agree	11	23.4%
	Disagree	14	29.8%
	strongly disagree	14	29.8%
cleaning oral cavity for ventilated patients is an unpleasant task	strongly agree	9	19.1%
	Agree	8	17.0%
	Uncertain	3	6.4%
	Disagree	14	29.8%
	strongly disagree	13	27.7%
cleaning oral cavity of ventilated patient causes patients discomfort	strongly agree	3	6.4%
	Agree	12	25.5%
	Uncertain	8	17.0%
	Disagree	9	19.1%
	strongly disagree	15	31.9%
the oral cavity of ventilated is difficult to clean	strongly agree	4	8.5%
	Agree	18	38.3%
	Uncertain	5	10.6%
	Disagree	12	25.5%
	strongly disagree	8	17.0%
oral cavity of ventilated patients get worse no matter what I do	strongly agree	7	14.9%
	Agree	6	12.8%
	Uncertain	5	10.6%
	Disagree	11	23.4%
	strongly disagree	18	38.3%
rank the importance of examining a patient's mouth on admission	One	1	2.1%
	Five	4	8.5%
	Six	8	17.0%
	Seven	5	10.6%
	Eight	8	17.0%
	Nine	4	8.5%
	Ten	17	36.2%

4.4. PRACTICE OF COMPREHENSIVE MOUTH CARE IN ICU

Results show that 37(78.7 %) ICU nurses had scored low on practice, while 10(21.3 %) ICU nurses scored moderate level of practice, and none scored excellent level of practice. See table 7 below.

TABLE 7 :LEVEL OF PRACTICE N=47

	Frequency	Percentage
POOR PRACTICE	37	78.7
MODERATE PRACTICE	10	21.3
Total	47	100.0

4.4.1. DISTRIBUTION OF SCORES AMONG PARTICIPANTS ABOUT MOUTH WASHES, EQUIPMENT, AND FREQUENCY OF PERFORMING COMPREHENSIVE MOUTH CARE

Table 8 shows that 25(53.2 %) never used tooth brush while performing comprehensive mouth care, and 12(25.5 %) reported to use a tooth brush rarely and 10(21.3 %) reported to use a tooth brush always.

Tooth paste was never used by 30(63.8 %), then 14(29.8 %) used it rarely while very few 3(6.4 %) of ICU nurses reported to use tooth paste always.

A swab was reported to be used always by 4(8.5 %), and 36(76.6 %) reported that they never use swab for comprehensive mouth care.

Some ICU nurses 19(40.4 %) reported that they never used sterile water while 18(38.3%) reported to use sterile water always.

Tap water was reported to be used always by 7(14.9 %) and 33(70.2 %) never used tap water during comprehensive mouth care procedure.

Normal saline was reported to be used always by 42(89.4 %), and 5(10.6 %) reported to use normal saline rarely.

Majority of ICU nurses [42(89.4 %)] reported that they never use chlorhexidine and few of ICU nurses [5(10.6 %)] reported that they use chlorhexidine rarely in comprehensive mouth care procedure and none reported to use chlorhexidine always in comprehensive mouth care.

A small majority [31(66.0 %)] of nurses reported to examine patient's mouth on admission while one third of ICU nurses [16(34 %)] reported that they do not examine patients mouth on admission. Most of nurses 31(66.0 %) performed comprehensive mouth care once per day while 9(19.1 %) performed mouth care whenever ICU patients need this procedure. See table 8 below

TABLE 8. DISTRIBUTION OF GRADES AMONG PARTICIPANTS ABOUT MOUTH WASHES, EQUIPMENT, AND FREQUENCY OF PERFORMING COMPREHENSIVE MOUTH CARE N=47

		Frequency	%
Toothbrush	never	25	53.2%
	rarely	12	25.5%
	always	10	21.3%
Tooth paste	never	30	63.8%
	rarely	14	29.8%
	always	3	6.4%
Swab	always	4	8.5%
	rarely	7	14.9%
	never	36	76.6%
Sterile water	never	19	40.4%
	rarely	10	21.3%
	always	18	38.3%
Tap water	always	7	14.9%
	rarely	7	14.9%
	never	33	70.2%
Normal saline	always	42	89.4%
	rarely	5	10.6%
Chlorhexidine	never	42	89.4%
	rarely	5	10.6%
Do you carry out oral health assessment on admission	no	16	34.0%
	yes	31	66.0%
How often do you provide comprehensive oral care to ventilated patients in your unit each day?	not at all	1	2.1%
	once per day	31	66.0%
	twice a day	3	6.4%
	three times a day	2	4.3%
	more than three times a day	1	2.1%
	as needed	9	19.1%

4.5 AVAILABILITY AND USE OF MOUTH CARE PROTOCOL IN ICU

Results show that 35(74.5%) of ICU nurses responded that there was no protocol about comprehensive mouth care while 12(25.5 %) said that there was a mouth care protocol.

Study results shows 36(76.6 %) who responded that ICU does not use a mouth care protocol while 11(23.4 %) responded that they use a protocol during mouth care procedure. See table 9 below

TABLE 9: AVAILABILITY AND USE OF MOUTH CARE PROTOCOL IN ICU N=47

		Frequency	%
Does your unit have a mouth care protocol?	no	35	74.5%
	yes	12	25.5%
Does your unit use a mouth care protocol?	no	36	76.6%
	yes	11	23.4%

4.6. TRAINING OF ICU NURSES

Table 10 below shows that 40(85.1 %) nurses working in ICU have never been trained to perform comprehensive mouth care for ventilated patients at their basic nursing training whereas 7(14.9%) responded that they were trained to do comprehensive mouth care at their basic nursing training.

Results show that 38(80.9%)have never had training in assessing and providing oral care for ventilated patients since they were appointed to work in ICU, while few of them 9(19.1%) had training about mouth care.

Results again show that 6(12.8 %) of ICU nurses responded that they had had in service training while 41(87.2%) did not have any kind of training about mouth care for ventilated patients.

Results from this study also show that 43(91.5%) appreciated to have further training on assessment and provision of comprehensive mouth care for ventilated patients and then four(8.5%) show that they do not need any further training on assessing and providing comprehensive mouth care for ventilated patients.

TABLE 10: TRAINING OF ICU NURSES N=47

		Frequency	%
Did you receive training in assessment and provision of comprehensive oral care at basic nursing training?	no	40	85.1%
	yes	7	14.9%
ICU trained?	no	27	57.4%
	yes	20	42.6%
Did you receive training in assessment and provision of oral health care since allocated in ICU?	no	38	80.9%
	yes	9	19.1%
if yes, what kind of training received	no training	41	87.2%
	in service	6	12.8%
	training		
Would you like further training on assessment and provision of comprehensive oral care?	no	4	8.5%
	yes	43	91.5%

4.7. DIFFICULTIES MET WITH NURSES WHILE DOING COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS

Results show that 28(59.6%) had no difficulty in doing comprehensive mouth care, while few of ICU nurses [8(17%)] mentioned lack of mouth care protocol as a difficulty, 6(12.8%) mentioned lack of equipment as difficulty, 1(2.1%) listed lack of motivation, lack of training and risk for extubation as difficulties in providing mouth care and 2(4.3%) did not mention anything as difficulty. See table 11 below

TABLE 11: DIFFICULTIES MET WITH NURSES WHILE DOING COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS

	Frequency	Percent
no difficult	28	59.6
no protocol	8	17.0
lack of equipment	6	12.8
lack of staff motivation	1	2.1
no training	1	2.1
risk for extubation and inhalation	1	2.1
not mentioned	2	4.3
Total	47	100.0

4.9. SUPPLY OF MOUTH CARE EQUIPMENT BY HOSPITAL

Table 12 shows that 23(48.9%) ICU nurses reported that hospital did not provide needed equipment for oral care and 13(27.7%) were not sure if that equipment was supplied.

TABLE 12 SUPPLY OF MOUTH CARE EQUIPMENT BY HOSPITAL N=47

	Frequency	Percent
no	23	48.9
not sure	13	27.7
yes	11	23.4
Total	47	100.0

4.10. ASSESSMENT OF ORAL HEALTH FOR VENTILATED PATIENTS ON ADMISSION

One third of ICU nurses 16(34%) mentioned that they do not assess patients on admission while 31(66%) responded that they assess ICU patients on admission. See table 13

TABLE 13: ASSESSMENT OF ORAL HEALTH FOR VENTILATED PATIENTS ON ADMISSION N=47

	Frequency	Percent
no	16	34.0
yes	31	66.0
Total	47	100.0

4.11. CROSS TABULATION RESULTS AMONG STUDY VARIABLES

4.11.1. ASSOCIATION BETWEEN PERCEPTION AND PRACTICE OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE

There was no association between perception and practice as result showed that ($p=0.515$), See table14

TABLE 14: ASSOCIATION BETWEEN PERCEPTIONS OF ICU NURSES AND THEIR PRACTICE

	Perception level			Fisher test result
	Poor perception N=1	Average perception N=10	High perception N=36	
Knowledge level				.515
Poor practice	1	10	31	
Moderate practice	0	0	5	
Excellent practice	0	0	0	

4.11.2. ASSOCIATION BETWEEN KNOWLEDGE AND PRACTICE OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE

The table 15 shows that, there was no association between knowledge and practice level of ICU nurses.

TABLE 15: ASSOCIATION BETWEEN KNOWLEDGE AND PRACTICE OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE

	Practice level			Fisher test result
	Poor practice=42	Moderate practice N=5	Excellent practice N=0	
Knowledge level				.883
Poor knowledge	2	0	0	
Moderate knowledge	32	4	0	
High knowledge	8	1	0	

4.11.3. ASSOCIATION BETWEEN KNOWLEDGE AND PERCEPTION OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE

Table 16 below shows that, there was association between knowledge and perception.

TABLE 16: ASSOCIATION BETWEEN KNOWLEDGE AND PERCEPTION

	Perception level			Fisher test result
	Poor perception =1	Average perception N=10	High perception N=36	
Knowledge level				.000
Poor knowledge	2	1	0	
Moderate knowledge	32	8	28	
High knowledge	8	1	8	

4.12. CONCLUSION

Results showed that nurses are lacking information to link the poor oral care to ventilator associated pneumonia and also lack of mouth care protocol and insufficient training for ICU nurses were contributing negatively to the practice of nurses.

CHAPTER5: DISCUSSION

5.0. INTRODUCTION

This chapter will state the major findings of the study. The study aimed to answer the following questions:

- What level of knowledge do ICU nurses have about comprehensive mouth care?
- What theoretical or in service training do ICU nurses have regarding comprehensive mouth care?
- To which extent mouth care is done to ventilated patients in ICU?
- Do ICU nurses have a protocol available and adhere to it while performing comprehensive mouth care?
- How do nurses perceive comprehensive mouth care for ventilated patients?

The conceptual framework was adopted and adapted from Diane Irvine Doran, 2002 and it was entitled Nursing Role Effectiveness Model. .

In present study structure was composed by a qualified and licensed ICU nurses whom the author was aimed to investigate their knowledge, skills in performing mouth care and perception towards mouth care procedure. Nursing unit includes nursing leadership team who provided the protocol and policies to guide the mouth care procedure , equipment necessary for the provision of mouth care procedure and training information of nurses working in ICU.

In this chapter the discussion will also incorporate explanation for the meaning of the findings, relate the findings to those of similar studies ,state the relevance of the findings/ implications, acknowledge the study's limitations then make suggestions for further research.

5.1. MAJOR FINDINGS OF THE STUDY

The discussion of findings was done based on specific objectives of this study and this included: nurses' knowledge about comprehensive mouth care for Ventilated patients; nurses' perceptions about comprehensive mouth care for ventilated patients; and nurses' practices in the provision of mouth care for ventilated patients, there was also objectives which aimed to detect training of ICU nurses about comprehensive mouth care, availability and adherence to mouth care protocol.

5.1.1. KNOWLEDGE OF ICU NURSES TOWARDS COMPREHENSIVE ORAL CARE FOR VENTILATED PATIENTS

The study results showed that 27 (57.4 %) of ICU nurses knew different procedures which might be included in comprehensive mouth care but only 2 (4.3 %) knew that poor oral care may result in Ventilator Associated Pneumonia as nosocomial infection in ICU, these findings are consistent with (Hajbaghery, Ansari and Fini, 2013, p. 24) who showed that only 21% of ICU nurses could not link the provision of oral care and prevention of Ventilator Associated Pneumonia. In the of (Ibrahim, Mudawi and Omer, (2015, p. 181) almost all nurses 97.4% stated that provision of oral care in ICU is important for infection prevention.

One-third of ICU nurses showed that they do not assess ICU patients on admission while 31(66.0%) assessed ICU patients on admission, this finding is consistent with (Hajbaghery, Ansari and Fini, 2013, p. 26) who showed that more than one fifth of the nurses stated that they do not assess the patients' oral cavity.

5.1.2. PERCEPTION OF NURSES TOWARD COMPREHENSIVE ORAL CARE FOR VENTILATED PATIENTS

Results also revealed that 36(76.6%) ICU nurses perceived comprehensive mouth care at high level and comprehensive oral care obtained 10th rank as an important procedure for ventilated patients among 17(36.2%) ICU nurses.

There was a highly significant correlation $P(<0.000)$ between knowledge and perception and these findings are in consistency with the study of (Ibrahim, Mudawi and Omer, (2015, p. 182)

5.1.3. PRACTICES OF ICU NURSES TOWARD COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS

Results of current study showed that 78.7%(n=37) of ICU nurses were found to have low practice level and the author linked this low practice level to lack of protocol where 74.5%(n=35) of ICU nurses showed that there was no available mouth care protocol and yet (Nobahar *et al.*, 2016, p. 448) and (Hillier *et al.*, 2013) showed that standardized oral care protocols in ICUs are required in order to improve the quality of oral care provided to ventilated patients.

Tooth brush was never used by 25(53.2%) of ICU nurses and yet it was shown to be a tool of choice to provide oral care when used twice per day to remove debris and dental plaque adequately from ventilated patients (Bonnie, Stott and Lloyd, 2002, p. 28); (Illsley, 2015) (Atay and Karabacak, 2014, p. 826) and (Nobahar *et al.*, 2016)

Chlorhexidine was never used by 89.4 % (n=42) which is a very big number of ICU nurses. When considering the importance of using chlorhexidine as mouthwash which was shown through different studies and showed that chlorhexidine can be effective for mouth care procedure and decreases the occurrence of ventilator Associated Pneumonia among ventilated patients. (Cuccio *et al.*, 2012, p. 302), (Snyders, Khondowe and Bell, 2011, p. 56) (Hillier *et al.*, 2013) and (Atay and Karabacak, 2014, p. 826) . However some evidence suggests that the use of chlorhexidine is preferred for cardiac surgery patients; as its benefits in ICUs are unknown and its routine use is not recommended for all ICU patients.

Normal saline was always used by 89.4 % (n=42) however studies showed that normal saline is not recommended for mouth care as it has effect of drying oral mucosal(Nobahar *et al.*, 2016, p. 448).

Regarding hospital equipments, only 23 (48.9%) mentioned that there is no provision of hospital supply and this is in contrast with (Ibrahim, Mudawi and Omer,(2015, p. 185) who showed that 72% of nurses agreed that the availability of hospital equipments and supplies were unsatisfactory.

ICU nurses gave responses which are contradictory, for example, 28(59.6%) of ICU nurses said that they do not have any difficulty in performing comprehensive mouth care for ventilated patients and yet results showed that 37(78.7%) of ICU nurses had low level of practice.

5.1.4. TRAINING OF ICU NURSES ABOUT COMPREHENSIVE MOUTH CARE FOR VENTILATED PATIENTS

Results mentioned that 38(80.9%) of ICU nurses had never been trained since allocated in ICU about comprehensive mouth care and their education background showed that 40(85.1%) never had training at basic nursing education ,this finding is consistent with (Hajbaghery, Ansari and Fini, (2013, p. 25) who showed that more than two-third of nurses did not pass any post basic training in oral care. These two findings are in contrary with the findings of (Ibrahim, Mudawi and Omer, (2015, p. 184) where most of ICU nurses had the training during their basic nursing training.

The results of current study are alarming as (Dale *et al.*, (2016) showed that lack of training contributed to poor oral hygiene for ventilated patients. Education of nurses on oral care practices resulted in significant improvement of their practices and on the clinical outcomes among the ventilated patients. Continuous and ongoing teaching of nurses is essential in maintaining good oral care practices among mechanically ventilated patients (Cherian and Karkada, 2015, p. 13).

This was emphasized by (El-aziz, (2014, p. 39) who showed that educational program were significant where was differences between nurses 'knowledge before and after the program and this educational program also increased motivation for nurses.

5.1.5. AVAILABILITY AND USE OF MOUTH CARE PROTOCOL

Although (Cherian and Karkada, (2015, p. 13) revealed that oral care protocol along with good oral care practices (like the use of toothbrush, foam swabs, chlorhexidine, lip moisturizer and subglottic suctioning) have a positive influence on reducing the incidence of VAP, for this presents study ,more than three fourth of nurses reported that there is no mouth care protocol in ICU to guide mouth care procedure. These findings are similar to (Ibrahim, Mudawi and Omer, (2015, p. 184) where all ICUs did not have any mouth care protocol and this was influencing nurses 'practice.

5.2 CONCLUSION

Evidence have shown that comprehensive mouth care may be a preventive measure of nosocomial infection and also comfort measure, results of current study show that some ICU nurses lack knowledge about important aspect of comprehensive mouth care which have an implication on their practice level.

CHAPTER 6.CONCLUSION AND RECOMMENDATIONS

6.1. RECOMMENDATIONS

Considering the importance role of good oral care in prevention of VAP; the current author recommends the following:

- The need for developing a standardized mouth care protocol about mouth care
- In service training to help ICU nurses understand what /how comprehensive mouth care should be done for ventilated patients thus to increase quality of care and prevent nosocomial infection which kill ICU patients and increase costs and hospital stay.
- If most of ICU nurses reported that they have never been trained about comprehensive mouth care at the basic nursing training ,this indicate that nursing curriculum might be missing the component of comprehensive mouth care for ventilated patients and the current author recommend that comprehensive mouth care for ventilated patients should be incorporated in basic nursing curriculum to facilitate general nurses to access at this information at their basic nursing training hence enable them to provide comprehensive mouth care to ventilated patients without any challenge.
- More studies should be done to rule out factors behind low practices for ICU about comprehensive mouth care as there was correlation between knowledge and practice for in other studies and this current study did not show any correlation neither between knowledge and practice nor perception and practice and this was probably due to the sample size which was small and study was conducted in one referral hospital, next studies would be better if they extend to all referral hospitals which have ICUs in Rwanda.
- The current researcher furthermore suggest that future studies would focus particularly to observed practice as this study ruled out reported practice, also there is a need to have consensus on mouthwashes, tools used and frequency of performing comprehensive mouth care for ventilated patients.

6.2. CONCLUSION

Although Comprehensive mouth care is critical care for all ventilated patients in prevention of nosocomial infection, specifically Ventilator Associated Pneumonia, results of the present study showed that most of ICU nurses reported that they have never been trained neither at their basic nursing education nor in ICU when appointed to take care of ventilated patients and most of them reported that there is no protocol of mouth care which can guide them in provision of care and this resulted in low level of practice about comprehensive mouth care where current study showed that most of ICU nurses had never used tooth brush and chlorhexidine which were proven through different studies to be effective in prevention of Ventilator Associated Pneumonia.

The results also showed that almost all ICU nurses could not link the practice of oral care and prevention of Ventilator Associated pneumonia which made the author to conclude this ,as was the reason that almost all ICU nurses reported to perform mouth care once per day being unaware of importance of performing several times comprehensive mouth care for ventilated patients.

Fortunately most of ICU nurses perceived well comprehensive mouth care and this is considered as positive thing which ensures that once they get chance to increase their knowledge and practice about comprehensive mouth care for ventilated patients, the performance will be interesting.

REFERENCE LIST

- Abidia, R. (2007) 'Oral Care in the Intensive Care Unit'; *THE JOURNAL OF CONTEMPORARY DENTAL PRACTICE*, 8(1), pp. 76–82.
- Ames, N. J. (2011) 'Evidence to support tooth brushing in critically ill patients', *American Journal of Critical Care*, 20(3), pp. 242–250. doi: 10.4037/ajcc2011120.
- Atay, S. and Karabacak, Ü. (2014) 'Oral care in patients on mechanical ventilation in intensive care unit : literature review', *International Journal of Research in Medical Sciences*, 2(3), pp. 822–829. doi: 10.5455/2320-6012.ijrms20140876.
- Bonnie, S., Stott, K. and Lloyd, R. (2002) 'THE EFFECT OF A COMPREHENSIVE ORAL CARE PROTOCOL', *journal of advocate health care*, 4(1), pp. 18–21.
- Booker, S., Murff, S., Lisa, K. and Jablonski, R. (2013) 'Mouth Care to Reduce Pneumonia', 113(10).
- Cherian, S. and Karkada, S. (2015) 'Effect of education related to oral care practices on nurses ' knowledge , practice and clinical outcomes of mechanically ventilated patients in Dubai', *Cherian ,Sonia Karkada,Suja*, 2(1), pp. 9–14.
- Cuccio, L., Cerullo, E., Rivet, C. and Steeves, S. (2012) 'An Evidence-Based Oral Care Protocol to Decrease Pneumonia', (October). doi: 10.1097/DCC.0b013e3182619b6f.
- Dale, C. M., Angus, J. E., Sinuff, T. and Rose, L. (2016) 'Ethnographic investigation of oral care in the intensive care unit', *American Journal of Critical Care*, 25(3), pp. 249–256.
- Dodds, M., Roland, S., Edgar, M. and Thornhill, M. (2015) 'Saliva A review of its role in maintaining oral health and preventing dental disease', *Nature Publishing Group*, 2, pp. 1–3. doi: 10.1038/bdjteam.2015.123.
- El-aziz, M. A. A. B. D. (2014) 'EFFECT OF EDUCATIONAL PROGRAM ON NURSES , KNOWLEDGE AND SKILLS ABOUT ORAL CARE FOR TRAUMATIZED PATIENTS', (January), pp. 25–47.
- Elbokhary, R., Osama, A. and Al-khader, M. (2015) 'Knowledge and Practice of ICU Nurses Regarding Endotracheal Suctioning for Mechanically Ventilated Patients in Khartoum Teaching Hospital', *American Journal of Clinical Neurology and Neurosurgery*, 1(2), pp. 92–98.
- Goldie, M. P. (2013) 'Oral hygiene care for critically ill patients to prevent ventilator-associated pneumonia (review)', (3), pp. 4–6.
- Hajbaghery, M. A., Ansari, A. and Fini, I. A. (2013) 'Intensive care nurses ' opinions and

practice for oral care of mechanically ventilated patients’, *Indian Journal of Critical Care Medicine*, pp. 23–27. doi: 10.4103/0972-5229.112154.

Hillier, B., Wilson, C., Chamberlain, D. and King, L. (2013) ‘Preventing ventilator-associated pneumonia through oral care, product selection, and application method: a literature review.’, *AACN advanced critical care*, 24(1), pp. 38–58. doi: 10.1097/NCI.0b013e31827df8ad.

Human, L., Bell, J., Hons, B., Care, C. and Education, P. N. (2007) ‘Oral hygiene care in critically ill patients’, *Southern Africa Journal Of Critical Care*, 23(2), pp. 61–65.

Ibrahim, S. M., Mudawi, A. M. and Omer, O. (2015) ‘Nurses ’ Knowledge , Attitude and Practice of Oral Care for Intensive Care Unit Patients’, (July), pp. 179–186.

Illsley, A. (2015) ‘Mouth care within Adult Critical care Anne Illsley , Service Improvement PDM , Ruth Pettit Deputy Sister , Critical Care Review of Guideline . Mouth care within Adult Critical care Anne Illsley , Service Improvement PDM , Ruth Pettit Deputy Sister , Criti’.

Javadinia, S. A., Kuchi, Z., Saadatju, A., Tabasi, M. and Adib-Hajbaghery, M. (2014) ‘Oral care in trauma patients admitted to the icu: Viewpoints of ICU nurses’, *Trauma Monthly*, 19(2), pp. 7–12. doi: 10.5812/traumamon.15110.

Kreitz, P. A. (2007) ‘Best Practices for Managing Organizational Diversity’.

Lin, Y.-S., Chang, J.-C., Chang, T.-H. and Lou, M.-F. (2011) ‘Critical care nurses’ knowledge, attitudes and practices of oral care for patients with oral endotracheal intubation: a questionnaire survey.’, *Journal of clinical nursing*, 20(21–22), pp. 3204–14. doi: 10.1111/j.1365-2702.2011.03819.x.

Maheshwari, V., M, N. C. and Ramnani, V. K. (2014) ‘A Study to Assess Knowledge and Attitude Regarding Hand Hygiene amongst Residents and Nursing Staff in a Tertiary Health Care Setting of Bhopal City’, *Journal of clinical and diagnostic research*, 8(August 2009), pp. 4–8. doi: 10.7860/JCDR/2014/8510.4696.

Miranda, A., de Paula, R., de Castro Piau, C. B., Costa, P. and Bezerra, A. B. (2016) ‘Oral care practices for patients in Intensive Care Units: A pilot survey’, *Indian Journal of Critical Care Medicine*, 20(5), p. 267. doi: 10.4103/0972-5229.182203.

Munro, N. and Ruggiero, M. (2014) ‘Ventilator-Associated Pneumonia Bundle’, *AACN Advanced Critical Care*, 25(2), pp. 163–175. doi: 10.1097/NCI.0000000000000019.

Nobahar, M., Reza, M., Malek, F. and Ghorbani, R. (2016) ‘Original article Effects of hydrogen peroxide mouthwash on preventing ventilator-associated pneumonia in patients admitted to the

intensive care unit', *Brazilian Journal of Infectious Diseases*. Sociedade Brasileira de Infectologia, 20(5), pp. 444–450. doi: 10.1016/j.bjid.2016.06.005.

Pear, S. (2007) 'Oral Care is Critical Care', *Infection Control Today*, 11(10).

Pearson, L. S., Hutton, J. L. and Pearson, L. (2002) 'A controlled trial to compare the ability of foam swabs and toothbrushes to remove dental plaque'.

Perrie, H., Scribante, J. and Windsor, S. (2011) 'A survey of oral care practices in South African intensive care units', 27(2), pp. 42–46.

Petry, N. M. (2002) 'A Comparison of Young , Middle-Aged , and Older Adult Treatment-Seeking Pathological Gamblers', 42(1), pp. 92–99.

Polit, D. and Beck, C. (2011) *Essential of Nursing research*. seven.

Saddki, N., Elani Mohamad Sani, F. and Mon Tin-Oo, M. (2014) 'Oral care for intubated patients: a survey of intensive care unit nurses', pp. 1–10. doi: 10.1111/nicc.12119.

Sarefho, A. P. (2011) *A dissertation submitted to The Faculty of Health Sciences , School of Nursing , University of Kwazulu Natal , Durban , South Africa Partial fulfilment of the requirements For the masters degree in critical care and trauma*.

Shi, Z., Xie, H., Wang, P., Wu, Y., Chen, E., Ng, L., Hv, W., Singer, M. and Needleman, I. (2010) 'Oral hygiene care for critically ill patients to prevent ventilator associated pneumonia (Protocol)', (2).

Snyders, O., Khondowe, O. and Bell, J. (2011) 'Oral chlorhexidine in the prevention of ventilator- associated pneumonia in critically ill adults in the ICU: A systematic review', *Southern Africa Journal Of Critical Care*, 27(2), pp. 48–55.

Soh, K. L., Ghazali, S. S., Soh, K. G., Abdul, R., Sharifah, R., Abdullah, S. S. and Ong, S. L. (2012) 'Oral care practice for the ventilated patients in intensive care units: a pilot survey', *J Infect Dev Ctries* 2012;, 6(4), pp. 333–339. doi: 10.3855/jidc.1634.

Trieger, N. (2004) 'Oral Care in the Intensive Care Unit', *American Journal of Critical care*, (800), pp. 2049–2050. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.546.4731&rep=rep1&type=pdf>.

ANNEXES

ANNEX 1.PERMISSION FOR USING STUDY QUESTIONNAIRE

Annah Sarefho <asarefho@gmail.com>

À

Rumagihwa Libere

Mai 10 à 11h46 AM

HI!

Sorry for responding late. You are welcome to use my study questionnaire, and hope you will share your findings with me.

Thanks

Cheers!

Annah

ANNEX 2. ENGLISH VERSION AND FRENCH VERSION STUDY QUESTIONNAIRES/QUESTIONNAIRE D'ETUDE)

STUDY QUESTIONNAIRE (ENGLISH VERSION)

Section A

1. Demographic Data and training history

Please tick your response in the box (✓)

1.1 AgeYears

1.2 Sex

1) Male 2) Female

1.3 Level of nursing education

1) Diploma 2) Bachelors' Degree 3) Graduate Degree 4)Other?
Specify.....

1.4 Length of nursing experience/service

1-7Days 1-3Weeks 1-11 Months 1Year up to now

1.5 Length of experience in Intensive care Unit

1-7Days 1-3Weeks 1-11 Months 1 Year up to now

1.7 Nationality

1) Citizen 2) Non – citizen

Section B

2. Oral health care/hygiene knowledge

2.1 Comprehensive oral care includes:

- 1) Endotracheal suctioning and moisturizing of lips
- 2) Oral assessment, brushing teeth, endotracheal suctioning and moisturizing oral cavity
- 3) Endotracheal suctioning and brushing teeth
- 4) Brushing teeth, suctioning and moistening the mouth cavity

2.2 Which tissues are less important when assessing oral health status for ventilated patients?

- 1) Lips
- 2) Gums
- 3) Tongue
- 4) Trachea
- 5) No idea

2.3 What signs do you think would make you suspicious of a poor oral care?

- 1) Moist lips
- 2) Bleeding gums
- 3) Dental plaque
- 4) Pink tongue
- 5) No idea

2.4 Which oral flora/organisms are predominant in ventilated patients?

- 1) Gram positive streptococci and dental pathogens
- 2) Gram negative streptococci and dental pathogens
- 3) Both 1 and 2
- 4) Different strains of pathogens
- 5) None of the above

2.5) Are there drugs which adversely affect oral health in ventilated patients?

- 1) Yes 2) No 3) I have no idea

2.6) Which class of drugs commonly used in ICU interfere with salivary production in critically ill patients?

- 1) Dormicum
- 2) Amoxicillin
- 3) Furosemide
- 4) Sympathomimetic

Section C

ORAL CARE PERCEPTIONS

Please indicate whether you: **strongly agree, agree, uncertain, disagree or strongly disagree** to the following statements by ticking (√) under the column that best describes your point of view.

Statement	Strongly disagree	disagree	uncertain	agree	Strongly agree
3.1 Comprehensive oral care is a very high priority in ventilated patients					
3.2 Comprehensive oral care contributes less to ventilated patient’s health and wellbeing					
3.3 Cleaning the oral cavity for ventilated patients is an unpleasant task					
3.4 Cleaning oral cavity of ventilated patients causes patient discomfort					
3.5 The oral cavity of ventilated patients is difficult to clean					
3.6 The oral cavity of ventilated patients get worse no matter what I do					

3.7 Rank importance of examining a patient’s mouth on admission on a ten-point scale with **1** as least important and **10** as very important. Just tick (√) your response below the number

Rank	1	2	3	4	5	6	7	8	9	10
Response										

3.8. Do you feel your hospital provides adequate resources/supplies for the provision of oral care?

1) Yes 2) no 3) not sure

Section D

Oral care Practices

Some of the internationally used and evidence-based oral care mouthwashes, cleansing tools and moistening agents for ventilated patients are listed below, indicate whether you: always, rarely or never use them by ticking (√) against each agent and indicating on the reasons column by putting a number that corresponds with the reason for **rarely** or **never** using the agent.

Lists of reasons and their numbers

- Not foreseen in the unit protocol **1**
- Lack of time **2**
- Lack of supplies and equipment **3**
- Lack of skills **4**
- It causes patient discomfort **5**
- Any Other reason (specify)..... **6**

Mouthwashes, cleansing tools and moistening agents	Always	Rarely	Never	Reasons
4.1 Tooth brush				
4.2 Tooth paste				
4.3 Swab				
4.4 Sterile water				
4.5 Tap water				
4.6 Normal saline				
4.7 Chlorhexidine				
4.8 Glycothymoline				
4.9 Lemon & glycerol				
4.10 Sodium bicarbonate				
4.11 Hydrogen peroxide				
4.12 Vaseline/lip balm				
4.13 Other(specify)				

4.14 Do you carry out oral health assessment on a patient on admission?

1) Yes 2) No

4.15. Do you have any practical difficulties in carrying out regular oral health care for patients in your unit?

1) Yes 2) No

(If yes explain).....

4.16. How often do you provide oral care to ventilated patients in your unit each day?

- 1) Not at all
- 2) Once per day
- 3) Twice per day
- 4) Three times per day
- 5) More than three times per day
- 6) As needed

Section E: Availability and adherence to oral care protocol

5.1. Does your unit have a mouth care protocol?

1) Yes 2) No

5.2. Does your unit use a mouth care protocol?

Thank you very much for your time!

**ANNEX 3. ENGLISH VERSION AND FRENCH VERSION STUDY QUESTIONNAIRES/QUESTIONNAIRE D'ETUDE)
STUDY QUESTIONNAIRE (FRENCH VERSION)**

1. Données démographiques

Veillez cocher votre réponse dans la case (√)

1.1 Âge Années

1.2 Sexe

1) Homme 2) Femme

1.3 Niveau de formation des infirmiers (es)

1) Diplôme 2) Baccalauréat 3) Diplôme d'études supérieure 4) Autre? Préciser

1.4 Expérience professionnel

Journées..... Mois Années.....

1.5 Durée de l'expérience en soins intensifs

Jours Mois Années ...

1.6 Avez-vous été forme en Soins Intensifs?

1) Oui 2) Non

1.7 Nationalité

1) Citoyen 2) Non - citoyen

Section B

2. Connaissances en hygiène bucco-dentaire

2.1 Les soins bucco-dentaires complets comprennent:

1) Aspiration endotrachéale et hydratation des lèvres

2) évaluation orale, brossage des dents, aspiration endotrachéale et hydratation de la cavité buccale

3) Aspiration endotrachéale et brossage des dents

4) Brossage des dents, aspiration et humidification de la cavité buccale

2.2 Quels tissus sont moins importants pour évaluer l'état de santé bucco-dentaire des patients ventilés?

1) Lèvres

2) Gencives

3) Langue

4) Trachée

2.3 Quels sont les signes qui, à votre avis, vous mettraient-ils à soupçonner un mauvais traitement bucco-dentaire?

1) Lèvres humides

2) Saignement des gencives

3) La peste dentaire

4) langue rose

2.4 Quelles sont les Germes / organismes oraux prédominants chez les patients ventilés?

1) Streptocoques Gram positifs et pathogènes dentaires

2) Streptocoques à Gram négatif et pathogènes dentaires

3) Les 1 et 2

4) Différentes souches d'agents pathogènes

2.5 Y a-t-il des médicaments qui nuisent à la santé bucco-dentaire chez les patients ventilés?

1) Oui

2) Non

2.6) quelle classe de médicaments couramment utilisés dans les soins intensifs interfère avec la production salivaire chez les patients gravement malades?

1) Dormicum

2) Amoxicilline

3) Furosémide

4) Sympathomimétique

2.7 Quel est l'infection nosocomiale respiratoire la plus fréquente associée à une mauvaise prise en charge bucco-dentaire chez les patients ventilés? (Spécifier).....

2.8 Avez-vous reçu une formation ou une instruction en matière d'évaluation et de soins buccodentaires complets pour les patients ventilés lors de la formation infirmière de base?

1) Oui

2) Non

2.9 Avez-vous reçu une formation ou une instruction sur l'évaluation et la dispensation de soins bucco-dentaires complets aux patients ventilés depuis qu'ils ont été affectés à votre unité?

1) Oui

2) Non

Si oui, quel type de formation / d'enseignement? (Spécifier).....

2.10 Souhaitez-vous une formation complémentaire ou des mises à jour sur l'évaluation et la dispensation de soins de santé buccodentaire complets pour les patients gravement malades?

1) Oui

2) Non

Section C

2. Perception des soins oraux

Veillez indiquer si vous êtes : 1 - très d'accord, 2 - d'accord, 3 - incertain, 4- en désaccord ou 5 - fortement en désaccord avec les énoncés suivants en cochant (√) le numéro qui décrit le mieux votre point de vue.

Déclaration	1	2	3	4	5
3.1 Les soins bucco-dentaires complets sont une priorité très élevée chez les patients ventilés					
3.2 Les soins oraux complets contribuent moins à la santé et au bien-être des patients					
3.3 Le nettoyage de la cavité buccale pour les patients ventilés est une tâche désagréable					
3.4 Le nettoyage de la cavité buccale des patients ventilés provoque une gêne pour le patient					
3.5 La cavité buccale des patients ventilés est difficile à nettoyer					
3.6 La cavité buccale des patients ventilés s'aggrave peu importe ce que je fais					

3.7 Évaluez l'importance de l'examen de la bouche d'un patient à l'admission sur une échelle de dix points, dont 1 au moins important et 10 comme très important (il suffit de cocher (√) votre réponse en dessous du nombre)

Ranger	1	2	3	4	5	6	7	8	9	10
--------	---	---	---	---	---	---	---	---	---	----

Section D

3. Pratiques de soins oraux

On trouvera ci-dessous une liste des solutions de soins bucco-dentaire, des outils de nettoyage et des agents humidifiant à usage international et à base de preuves cliniques, indiquant si vous avez: toujours, rarement ou jamais les utilisez en cochant (√) contre chaque agent et en indiquant les raisons. Colonne en mettant un nombre qui correspond à la raison pour rarement ou jamais en utilisant l'agent.

Listes des raisons et de leur chiffre

Non prévu dans le protocole de l'unité - 1

Manque de temps - 2

Manque de fournitures et d'équipement - 3

Manque de compétences - 4

Il provoque l'inconfort au patient - 5

Toute autre raison (préciser) 6

Rince-bouche, Object de nettoyants et agents humectant	Toujours	Rarement	Jamais	Raisons
4.1 Brosse à dents				
4.2 Pâte dentifrice				
4.3 Tampon				
4.4 Eau stérile				
4.5 Eau du robinet				
4.6 Sérum physiologique				
4.7 Chlorhexidine				
4.8 Glycothymoline				
4.9 Citron et glycérine				

4.10 Bicarbonate de sodium				
4.11 Peroxyde d'hydrogène				
4.12 Vaseline / baume pour les lèvres				
4.13 Autre (préciser)				

4.14 Effectuez-vous une évaluation de la santé bucco-dentaire d'un patient à l'admission?

1) Oui 2) Non

4.15 Quel pourcentage de patients dans votre unité ont besoin d'aide pour les soins bucco-dentaires? (Veuillez préciser).....

4.16 Qui prend soin de la bouche dans votre unité? (Veuillez préciser).....

4.17 Existe-t-il un outil / guide d'évaluation que vous utilisez pour établir état de soins bucco-dentaires du patient?

1) Oui 2) Non (si oui, nommez l'outil)

4.18 Avez-vous des difficultés pratiques à pratiquer régulièrement des soins bucco-dentaires pour les patients de votre unité?

1) Oui 2) Non (Si oui expliquer)

4.19. Votre service a-t-il et utilise un protocole de soins de la bouche?

1) Oui 2) Non

4.20. À quelle fréquence donnez-vous des soins bucco-dentaires aux patients ventilés de votre unité chaque jour?

1) Pas du tout

2) Une fois par jour

3) Deux fois par jour

4) Trois fois par jour

5) Plus de trois fois par jour

6) Au besoin

4.21 Pensez-vous que votre hôpital fournit des ressources / équipements adéquat pour la prestation de soins bucco-dentaires?

1) Oui 2) Non 3) pas sûr

Merci beaucoup pour votre temps!

ANNEX 4 INFORMATION DOCUMENT

I am Liberatha RUMAGIHWANA, student in Master's of Nursing sciences, Critical Care and Trauma at the College of Medicine and Health Sciences, University of Rwanda. As per UR academic requirements, I am going to conduct a research entitled Exploring **ICU nurses' knowledge, practices and perceptions about comprehensive mouth care for ventilated patients** and I would like to ask you some questions related to this topic as nurses who are always with ventilated patients.

The aim of this study is to explore intensive care unit (ICU) nurses' knowledge, practices and perceptions about comprehensive mouth care for ventilated patients.

You have been chosen for this study as an ICU nurse, who is responsible to provide daily nursing care including mouth care to ventilated patients.

Your participation in this study is voluntary. Some possible challenges that you may encounter are taking your time to fill in the questionnaire and potential disruption of ward routine activities but I would encourage that you do this during break time. All the information that you are going to provide will remain confidential and you don't need to mention your name.

All data collected will be coded and stored securely and cannot be accessed by anybody else except the owner of this study and supervisor. For this reason, you are kindly requested to give your sincere and truthful answer about demographic data, knowledge, perceptions and practice in relation to mouth care procedure for ventilated patients. All this is completely on voluntary basis and your refusal from participation or to answer questions will not affect your working environment. Note that there is no reward or payments for participating in this study.

To complete this questionnaire will take you about 30 minutes.

If you have further questions or would like to know the results of this study, please feel free to contact the principal investigator on following addresses:

Principal Investigator: RUMAGIHWANA Liberatha; Tel: 0788756885/0722756885 or using email: rumaglib@yahoo.fr.

Supervisor: Prof. BUSISIWE Rose Mary Bhengu; email: bhengub2@ukzn.ac.za

In case you are not comfortable with the process of the research, please contact the research committee on:

Director for Research, Innovation and Postgraduate studies: Prof GAHUTU Jean Bosco; Tel
+250 783340040 or on email: j.b.gahutu@ur.ac.rw

Thank you.

ANNEX5 INFORMED CONSENT FORM

I....., confirm that I have been given and understood well the information about this study, I have been also given the opportunity to ask questions about this current study entitled **EXPLORING ICU NURSES’ KNOWLEDGE, PRACTICES AND PERCEPTIONS ABOUT COMPREHENSIVE ORAL CARE FOR VENTILATED PATIENTS** conducted by **RUMAGIHWANA LIBERATHA** from the University of Rwanda and my participation is voluntary without any kind of incentives.

I understand also that I can withdraw at any time without giving reasons and that I will not be penalized for neither withdrawing nor will I be questioned on why I have withdrawn.

The information given in this study will be kept in confidentiality as the questionnaire is anonymous and results will be only accessed by the current researcher and study supervisor

My signature

Date

Signature of researcher



**CENTRE HOSPITALIER UNIVERSITAIRE
UNIVERSITY TEACHING HOSPITAL**

Ethics Committee / Comité d'éthique

February 24th, 2017

Ref.: EC/CHUK/279/2017

Review Approval Notice

Dear Rumagihwa Liberatha,

Your research project: "Exploring ICU nurses' knowledge, practices and perceptions about comprehensive mouth care for ventilated patients at Kigali University Teaching Hospital."

During the meeting of the Ethics Committee of University Teaching Hospital of Kigali (CHUK) that was held on 24/02/2017 to evaluate your protocol of the above mentioned research project, we are pleased to inform you that the Ethics Committee/CHUK has approved your protocol.

You are required to present the results of your study to CHUK Ethics Committee before publication.

PS: Please note that the present approval is valid for 12 months.

Yours sincerely,



John Nyirigira
The Secretary, Ethics Committee,
University Teaching Hospital of Kigali

<<University teaching hospital of Kigali Ethics committee operates according to standard operating procedures (Sops) which are updated on an annual basis and in compliance with GCP and Ethics guidelines and regulations>>

B.P. :655 Kigali- RWANDA www.chk.rw Tél. Fax : 00 (250) 576638 E-mail : chuk.hospital@chukigali.rw

To: Director General of Kigali Teaching Hospital

Respected Sir,

April 4th, 2017

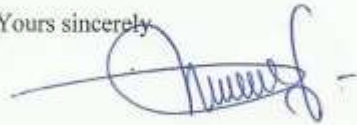
Re: Request of permission to collect data for research

I hereby request to collect data in Intensive Care Unit of Kigali University Teaching Hospital.

I am a student in master's program, critical care and trauma track at the University of Rwanda, and my research topic is entitled: **EXPLORING ICU NURSES' KNOWLEDGE, PRACTICES AND PERCEPTIONS ABOUT COMPREHENSIVE ORAL CARE FOR VENTILATED PATIENTS**. According to University of Rwanda academic requirements, I have to conduct a research related to my specialty which is **intensive care**, the reason why I am requesting this permission to be able to collect data related to my research topic.

Your positive feedback will be appreciated³,

Yours sincerely



RUMAGIHWI LIBERATHA

Supervisor's signature



Professor BUSISISWE ROSE MARY BHENGU

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 09/01/2017

Ref: CMHS/IRB/011/2017

RUMAGIHWANA Liberatha
School of Nursing and Midwifery , CMHS, UR

Dear RUMAGIHWANA Liberatha

RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled *"Exploring ICU Nurses' Knowledge, Practices And Perceptions About Comprehensive Oral Care For Ventilated Patients At Kigali Teaching Hospital"*

Having reviewed your protocol and found it satisfying the ethical requirements, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.

for
Professor Kato J. NJUNWA
Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR



Prof. J. Njunwa
Chair

Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR

SCHOOL OF NURSING AND MIDWIFERY

Kigali, on 30 / 01 / 2017

Ref. No: 70 / UR-CMHS/SoNM/17

TO WHOM IT MAY CONCERN

Dear Sir/Madam,


Re: Request to collect data

Referring to the above subject, I am requesting for permission for **RUMAGIWA LIBERATHA**, a final year student in the Masters of Science in Nursing at the University of Rwanda/College of Medicine and Health Science to collect data for his/her research dissertation entitled **EXPLORING ICU NURSES' KNOWLEDGE, PRACTICES AND PERCEPTIONS ABOUT COMPREHENSIVE ORAL CARE FOR VENTILATED PATIENTS .**

This exercise that is going to take a period of 2 months starting from 13th February 2017 to 12th April 2017 will be done at **KIGALI UNIVERVESITY TEACHING HOSPITAL**

We are looking forward for your usual cooperation.

Sincerely,

 **Dr. Donatilla MUKAMANA, RN, PhD**
Dean, School of Nursing and Midwifery
College of Medicine and Health Sciences



